Aalto University
School of Business

How does Information Asymmetry Affect Lease-or-Buy Decisions?

Evidence from US Listed Companies in Air Transportation industry

Master's Thesis
Ossi Niemelä
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Instructor: Henry Jarva

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Aalto University
School of Business

Aalto University, P.O. BOX 11000, 00076 AALTO
www.aalto.fi

Abstract of master's thesis

Author Ossi Tapio Niemelä

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Abstract

RESEARCH OBJECTIVES

Firms can either lease or buy assets. This study examines the relationship between information asymmetry and leasing. It investigates the determinants behind firms' decisions to lease or acquire an asset using information asymmetry framework to see if it has additional explanatory power.

Current accounting standards classify leases to capital and operating leases allowing firms to have significant off-balance sheet liabilities and assets by taking advantage of the accounting treatment of operating leases. Off-balance sheet operating lease commitments potentially distort interpretation of firm-specific metrics for risk, performance and return by ignoring significant amount of debt that remain outside the formal recognition in the financial statements.

Prior studies have connected the traditional economic benefits, accounting quality and financial constraints to the propensity to lease. Extending the previous findings, the empirical analysis in this study investigates the association between operating leases and information asymmetry.

The current leasing standards are undergoing a major restructuring as the IASB published its new standard, IFRS 16 Leases, in January 2016. It will have a fundamental impact on lease accounting and thus this study reflects the possible consequences of the standard, which has an effective date in January 2019.

DATA AND METHODOLOGY

Data used in this study is obtained from Compustat database. The study focuses on air transport industry since it is very lease intensive business. The data consists of 744 observations from years 1995-2016. A subsample of 108 observations used to study the association with another proxy for information asymmetry.

Empirical part of this study is conducted using quantitative regression analysis. Information asymmetry is examined by using two proxy variables as well as two different proxies for lease propensity. The effect of asymmetric information is examined studying the relationship between the lease proxy and the information asymmetry proxy using two different models.

FINDINGS

The study does not succeed in finding evidence supporting the main hypothesis that information asymmetry is associated with off-balance sheet leasing. The results imply that information asymmetry does not have incremental explanatory power explaining off-balance sheet leases.

Keywords leasing, information asymmetry, lease-or-buy decisions, off-balance sheet financing, IFRS

Tekijä Ossi Tapio Niemelä

Työn nimi Tiedon epäsymmetrian merkitys yritysten vuokrata vai ostaa –päätöksissä. Empiirinen tutkimus lentoliikennealalta Yhdysvaltojen pörssilistatuista yrityksistä

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Koulutusohjelma Laskentatoimi

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Tiivistelmä

TUTKIMUSTAVOITTEET

Yritykset rahoittavat omaisuuserän hankinnan joko ostamalla tai vaihtoehtoisesti vuokraamalla sen. Tämän tutkielman tavoitteena on selvittää, vallitseeko yritysten käyttämällä taseen ulkopuolisella leasing-rahoituksella ja tiedon epäsymmetrian välillä yhteys. Siinä selvitetään syitä, jotka johtavat päätökseen omaisuuserän ostamiseen tai vuokraamiseen. Tutkimuksen keskeisin pyrkimys on selvittää, selittääkö tiedon epäsymmetria yritysten vuokrauspäätöksiä.

Vallitsevat kirjanpitosäännöstöt luokittelevat leasingsopimukset rahoitusleasingiin ja käyttöleasingiin. Näiden kahden leasing-tyypin kirjanpitokohtelu on hyvin erilainen toisiinsa nähden, mikä on luonut yrityksille mahdollisuuden hyödyntää käyttöleasingin ominaisuuksia ja pitää merkittäviä omaisuus- ja velkaeriä taseen ulkopuolella. Taseen ulkopuolisen rahoituksen käyttö saattaa luoda väärän vaikutelman yrityksen tosiasiallisesta velkaantuneisuudesta, suorituskyvystä ja tuotosta, mikäli käyttöleasingeriä ei aktivoida taseeseen.

Aikasempi tutkimus on selittänyt taipumusta käyttöleasingin hyödyntämiseen muun muassa taloudellisilla eduilla, tilinpäätöksen laadulla ja taloudellisilla vaikeuksilla. Näihin löydöksiin pohjautuen tutkimus selvittää, onko tiedon epäsymmetria merkittävä vaikutin yrityksen innokkuuteen vuokrata tutkimalla näiden yhteyttä empiirisin keinoin. Tutkielman päähypoteesi on että, lisääntynyt tiedon epäsymmetria johtaa suhteelliseesti lisääntyneeseen vuokrausasteeseen.

Nykyinen leasing-standardisto on merkittävän muutoksen äärellä. Kansainvälinen kirjanpitosäännöstöjä laativa IASB julkaisi uuden leasing standardin, IFRS 16 Leasing, tammikuussa 2016. Standardi astuu voimaan pakollisena tammikuussa 2019 ja se tulee poistamaan luokittelun käyttö- ja rahoitusleasingiin. Se tulee vaikuttamaan merkittävästi paljon vuokraavien yritysten tilinpäätöslukuihin esimerkiksi velkaantuneisuuden kasvun myötä.

DATA JA TUTKIMUSMENETELMÄ

Tutkielman empiirisessä osiossa käytetty data on peräisin Compustat-tietokannasta. Otos koostuu yhteensä 744 havainnosta listatuista amerikkalaisista lentoyhtiöstä vuosilta 1995-2016. Toinen pienempi aliotanta sisältää 108 havaintoa, joita hyödynnetään toisessa mallissa. Empiirinen tutkimus koostuu regressioanalyysistä, jossa yritysten suhteellista halukkuutta käyttää leasingrahoitusta selitetään tiedon epäsymmetrialla ja kontrollimuuttujilla. Vuokrausastetta ja tiedon epäsymmetriaa kuvataan molempia kahdella eri muuttujalla. Tutkielmassa käytetään kahta eri regressoitavaa mallia.

LÖYDÖKSET

Tässä tutkimuksessa ei löytynyt yhteyttä käyttöleasingin ja yrityksessä vallitsevan tiedon epäsymmetria välillä. Empiiristen tulosten mukaan se ei selitä yritysten vuokraustaipumusta.

Avainsanat leasing, tiedon epäsymmetria, IFRS, taseen ulkopuolinen rahoitus

ABBREVIATIONS

AICPA = American Institute of Certified Public Accountants

ALR = Assets to lease liabilities ratio

APB = Accounting Principles Board

D/E = Debt to Equity

FAS = Financial Accounting Standards

FASB = Financial Accounting Standards Board

G4+1 = the Group of Four Plus One

IAS = International Accounting Standards

IASB = International Accounting Standards Board

IFRS = International Financial Reporting Standards

MLP = Minimum lease payments

MTB = Market-to-book ratio

PIN = Probability of informed trade

ROA = Return on Assets

ROE = Return on Equity

SEC = United States Securities and Exchange Commission

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1 INTRODUCTION

This chapter explains the main purpose of this study introducing the objectives and research method. Moreover, this chapter discusses a common setup of buy-or-lease problem and motivates the reader to familiarize her or himself with the topic. Concisely, the key research problem is finding out whether information asymmetry is associated with lease-or-buy decisions.

1.1 Background and motivation

Firms constantly balance between internal and external financing to optimize their capital structure. Pioneers of the field Modigliani and Miller (1958) argue that under certain conditions, the value of project does not depend on how it is financed. Modigliani and Miller provided the academic world with Capital-Structure Irrelevance Proposition. Their theorem suggests that different combinations of equity and debt do not create shareholder value when few assumptions are met. The researchers set strict conditions for irrelevancy to take place. It assumes that there are no taxes nor bankruptcy costs. Obviously, these assumptions are unlikely to occur and in reality firms have to deal with taxes, transactions costs and risk of bankruptcy. Thus, academic consensus is that capital structure, in fact, does matter. (Bradley et al. 1984). Another fundamental idea in finance is maximization of shareholder value. It implies that firm's foremost interest is maximizing value for its shareholders. (Lazonick & O'Sullivan 2000). Thus, firms choose the cheapest options to finance their investments to optimize value creation.

After finding out how much and to what a firm should invest in the first place, it faces the vital question of how to finance the investment. Firms can either use cash in their hands or borrow from a bank to finance the purchase. By buying an asset, the firm gets full ownership of the asset along with all the risks included. Third option is obtaining the asset is by arranging a lease contract. Leasing means renting the asset for a predetermined period. Johnson and Lewellen (1972) created a model to measure these two alternative ways of financing an asset purchase. In their study, the researchers included quantifiable factors in their model ignoring possible noneconomic "pride of ownership" factors. Hence, the alternatives should be compared solely by the future cash flows they create and discount them considering all the possible tax effects and salvage values. (Johnson & Lewellen 1972). This is theoretically sound

model to measure the ups and downs in lease financing. Still, there is a whole bunch of other determinants in the lease-or-buy equation, which will be examined in this study.

Primarily, this study examines whether the presence of information asymmetry influences lease-or-buy decisions. Information asymmetry exists when counterparties in a transaction have different levels of knowledge (Scott 2008). Historically the primary benefits of leasing compared to other sources of finance have been easy asset management, tax benefits and off-balance sheet finance (Johnson & Lewellen 1972; Brealey et al. 2012). Total amount of global lease financing was US$883.96 billion in 2014. In the United States alone, the popularity of leasing has increased from $140 billion in 1994 (Imhoff et al. 1997) to US$335.1 billion in 2014 while new business volume was around 20 percent in 2011, 9 percent in 2012 and 1,7 percent in 2013 (White Clarke Global Leasing Report 2015). Leasing is the largest source of external finance for small firms (Eisfeldt & Rampini 2009). As many as 80 percent of the US companies use leasing (Gavazza 2010). These enormous figures motivate in-depth studies on leasing.

Under current accounting standards, the fundamental issue in lease accounting is the distinction of capital and operating leases. Capital leases are reported on the balance sheet as long-term debt whereas operating leases are rent expense, and thus remain unrecognized on balance sheet. Operating leases are treated as part of operating expenses instead of financing expenses, which they many times should be. Cash flow, operating income, capital and profitability measures must be adjusted to financing expenses among firms using significant amount of operating leasing. This has material impact on leverage and profitability as well as firm valuation. (Damodaran 2009). Thus, the academic research explains a big proportion of firms' preference of operating leases over capital leases with the possibility of off-balance sheet financing (Imhoff et al. 1991; Beattie et al. 1998; Goodacre 2003).

The off-balance sheet element of operating leases has aroused much debate inside the accounting industry. Standard setters and users of financial statements find off-balance sheet finance problematic since executives actively avoid capitalization of leases by circumventing the capitalization rules. In fact, SEC staff study documented that in 2005, 96 percent of all future cash flow payments committed under leasing contracts in the US are associated with operating leases. Hence, some $1 trillion in lease obligations remain unreported on the balance sheets of the US firms. (Jesswein et al. 2009). Leasing standards have long been controversial regarding the recognition in the balance sheet. Potential misstatements arise from operating leases as it enables off-balance sheet financing. Buying an asset is often straightforward what

comes to recording the transaction. The buyer records transaction in the balance sheet as an asset (property, plant & equipment), and as a liability if the transaction is financed with debt. Recording lease transaction depends how the contract is classified. Under the current leasing accounting standards, the many times artificial classification exists in both FAS and IAS. Operating leases are shown as a rent expense in the lessee's income statement as they usually are short-term in nature. The accounting for capital leases is quite different. Capital leases are recognized in the lessee's balance sheet an asset and liability similarly to an asset purchase. (Troberg 2013).

Lease standards and reporting requirements have evolved through decades to cope with the changes in the needs of lessees, lessors, investors, tax authorities and many other users of financial statements. This is also why leasing is very current topic. In January 2016, the IASB published its new standard for leases. The new standard IFRS 16 is an outcome of a long-lasting project conducted in cooperation with the FASB revising the outdated standards. It will have significant impact among many lessees as it will remove the classification of capital and operating leases. All IFRS reporting firms must comply with the new IFRS 16 standard in January 2019. The standard will tackle many leasing related grey areas and will probably change the behavior of many firms. Hence, this study also investigates the accounting standards regarding leasing to understand its implications in practice.

The fundamental discussion around the accounting treatment of leases has been whether to disclose information formally in the financial statements or use footnotes. Accounting standard setters need to adjust reporting requirements based on research evidence and commentary from the field. Some argue that footnote disclosure is enough to capture the attention of the users of financial statements. Long-term noncancelable operating leases are reported outside the body of balance sheet, and instead disclosed in the footnotes. (ILW 1993). Executives are active in avoiding disclosing lease liabilities whenever possible, especially if it has direct impact on risk measurements, executive payoff or some other key figure relevant for them. Using operating leases instead of finance leases is the simplest way to use off-balance sheet financing. (Lipe 2001). Omitting operating leases from balance sheet has material impact on liquidity, gearing and return on assets among others (Goodacre 2003).

1.2 Main objective and contribution

It has been of a great academic interest, what are the crucial determinants resulting in decision to buy an asset or alternatively to lease it. This study contributes to the discussion by

using the framework of information asymmetry. The relationship between information asymmetry and lease decisions has not been studied extensively. Beatty et al. (2010) report the association between propensity to lease and accounting quality. They find that firms with bad accounting quality lease relatively more since these firms have limited access to capital markets and cannot borrow money with a reasonable cost. Eisfeldt and Rampini (2009) and Sharpe and Nguyen (1995) find relationship between operating leasing and financial constraints. Firms struggling to get external financing tend to use leasing more. Moreover, their findings suggest that small firms lease relatively more compared to large ones. In addition to understanding the nature of these type of financing decisions, this study contributes by mapping the proposed regulatory changes in lease accounting, which will largely impact IFRS-reporting firms. Understanding likely impact of the changes is essential to regulators, executives as well as investors. Finally the study reports general trends inside leasing industry with a focus on airlines.

Building on their idea, the main hypothesis in this study is that under conditions of information asymmetry, firms have the tendency to lease relatively more because they cannot borrow the capital contributing to lease research by filling the gap in studying the determinants behind lease-or-buy decisions. It extends prior research on the factors affecting leasing decision. It is designed around comprehensive theory background by reviewing the prior literature. Additionally, it gathers empirical evidence by using regression analysis to study the relationship between tendency to use lease financing and the amount of information asymmetry involved. Studies show that retail and aircraft industries are the most active users of lease financing (Grossman & Grossman 2010). Hence, the data used in the empirical part of this study is from air transportation industry on listed US companies. Information asymmetry is associated in the prior academic research with firm valuation, suboptimal capital allocation and agency costs. There is one main hypothesis to answer the research question.

1.3 Structure

This thesis consists of seven chapters. It follows a common scientific roadmap found in many theses and academic articles. Thus, the remainder of the study is organized as follows. Chapter 2 and 3 provide the prior research on lease-or-buy decisions, leasing theory and information asymmetry guiding the reader toward the relevant academic work. Chapter 2 focuses on theory of lease decisions, capitalization of operating leases as well as discusses the institutional setting of lease accounting. The history recap of leasing standards builds a solid foundation to analyze

the current standard environment and understand the ongoing shift to IFRS 16. Chapter 3 introduces the concept of information asymmetry focusing on concepts such as agency theory, public and private information and disclosure policies in the light of asymmetric information. After providing the theoretical framework, Chapter 4 introduces the research problem and the main hypothesis. Chapter 5 discusses research design and explains the variable construction in-depth. Moreover, it describes the data and sample selection process. In Chapter 6, all the empirical results are presented and interpreted. Finally, Chapter 7 concludes the findings of this study by gathering the main learning points of this study and additionally addresses direction for potential future research. Chapter 7 present the limitations of the study. In the end of the study, there is a comprehensive list of references used in the study.

2 LEASE ACCOUNTING RESEARCH

This section provides the main theoretical concepts incorporated in lease accounting relevant for the purposes of this study. It gathers the prior lease research enabling readers to understand the building blocks of the study. Further, it gives a more comprehensive definition for leasing and examines the important distinction of operating and capital leases. Besides, this chapter introduces the cornerstone application in lease research; constructive capitalization method of operating lease commitments by Imhoff, Lipe and Wright (1991, 1997) (*hereafter ILW*). Their method allows financial statement users to estimate the amount of unrecorded assets and liabilities. Much of this study is linked to the off-balance sheet element of operating lease commitments. Hence, this chapter allows the reader to familiarize him or herself with a widely used solution to the problematic issue in lease accounting. Finance and economics literature identifies a list of theoretically valid reasons to lease such as financial distress, marginal tax rate, asset specificity, growth options and firm size (Cornaggia et al. 2012; Graham 1998; Beatty et al. 2010). This chapter examines these determinants based on prior academic literature on lease-or-buy decisions. Finally, it sheds light on the standard setting bodies by creating a comprehensive outlook of the crucial lease accounting standards and their development concluding with a review of the new IFRS 16 standard and its implications.

2.1 Lease-or-buy decisions

A firm invests in fixed asset to gain benefits over its useful life. Thus, the firm chooses the best alternative between buying and leasing considering primarily the shareholder's opinion because, as mentioned in the introduction, the firm's principal function is to maximize shareholder value. (Johnson & Lewellen 1972). Asset is a resource controlled by the entity as a result of past events. Moreover, asset gives a promise of future benefit related to it. Similarly, liability is a present obligation of the entity arising from past events. It is the settlement of which is expected to result in an outflow of economic benefits from the entity. (Troberg 2013; IAS 37.10). Generally, assets and liabilities are recognized as current (short term) and non-current (long-term). Non-current assets and liabilities are expected to last more than 12 months while current assets and liabilities less than 12 months. (Troberg 2013). Financial Accounting Standards Board (FASB) defines assets by their economic benefits and expected future economic benefits. In the FASB's Concept Statement No. 6 (1985), asset has the following characteristics:

i) an asset embodies a probable future benefit that involves a capacity, singly or in combination with other assets, to contribute directly or indirectly to future net cash inflows

ii) a particular entity can obtain the benefit and control others' access to it

iii) the transaction or other event giving rise to the entity's right to or control of the benefit has already occurred.

Schuetze (1993) criticizes FASB's definition as too vague and open-ended leaving too much room for interpretations. He proposes excluding some items from the assets like leases. The exact definition is unnecessary for the purposes of this study. The paramount interest is understanding definition of asset and the different financing options. Again, the FASB has defined liability of an entity as a present economic obligation for which the entity is the obligor. Its predecessor APB suggests in Statement No. 4 (1975) that economic obligations are "present responsibilities to transfer economic resources or provide services to other entities in the future". When company buys an asset, it gets right to all benefits of the services that asset provides as well as the right to sell it at any date in the future. Whereas lease contract provides the firm with right to the benefits of the services from the asset for a predetermined period stated in the contract. (Smith & Wakeman 1985).

Leasing can be understood as an alternative to asset purchase. Lease-or-buy decisions are business problems aiming to find an optimal solution to finance an asset. Under capital lease contract, the lease-or-buy decision is in practice a lease-versus-borrow setup, since it is unrealistic to assume firms buying expensive assets with cash. Thus, *capital leases* are largely similar to buying with secured debt. Purchases of long-term assets are financed with a long-term combination of equity and debt. Similarly, capital lease creates long-term obligations yet the payments are spread out to different periods instead of a lump sum paid at the time of the transaction in cash purchase. (Johnson & Lewellen 1972; Brealey et al. 2012). Capital leases act similarly to long-term debt contracts what comes to the factors determining for example their maturity (Hart & Moore 1994).

Operating lease contracts often are more like lease-or-buy problems. They are, at least in theory, short-term contracts concerning less valuable assets than in the case of capital leases. (Brealey et al. 2012). Thus, firms choose between acquiring asset with cash and operating lease contract. Operating leases have different structure compared to capital leases. Lessors need to adjust their lease positions by redeploying. Lessors want operating lease period to be as long as possible whereas the lessees might want the opposite to achieve more flexibility. (Gavazza

2010). Usually, the lessees want short maturities because they are unwilling to tie lots of long-term capital whereas lessors prefer long lease contracts since they are unwilling to constantly adjust their positions and redeploy lease assets.

Lease contracts are valued based on the price difference to debt financing. A competent CFO should do a thorough analysis of the costs to borrow the money to buy the asset and compare it to lease costs offered by a lease financier. (Myers et al. 1976; Brealey et al. 2012). Lease contracts often concern considerable capital investments. Executives might weigh up for example buying new aircraft fleet or alternatively leasing it. Figure 1 illustrates a simplified structure of an aircraft lease contract. The beneficiary of the asset's services is called *lessee* and the rightful owner of the asset is *lessor*. The lessee makes periodic payments to the lessor against the right to use the asset for a predetermined period. Lessors are often financial institutions specialized in providing lease financing. Who is considered as the actual owner of the asset depends on the terms stated in the contract between the counterparties. Under operating lease contract, the risks remain on the lessor as it is the owner of the asset and rents is for a certain period. Under capital lease contract, the risks and rewards of the leased asset are transferred similarly to asset purchase to the lessee. Thus, the lessee becomes in consequence the owner of the asset accounting wise. (Brealey et al. 2012).

Figure 1. *Lease contract flow*

Finance literature generally agrees that alternative investments should be judged based on their net present values. Finance theory also shares the idea that the source of financing is irrelevant when judging between alternative capital investments (Johnson & Lewellen 1972; Modigliani & Miller 1958; Bradley et al. 1984). Assuming Miller-Modigliani (1958) framework would apply, and the capital structure of a firm would be irrelevant. Then the executives would be solely interested in the cost of finance. Thus, the simplest answer to the question is that firms choose between leasing and buying by judging which alternative leads to lower cost of financing. The lessees would compare the costs of a rental contract to the costs

arising from buying the asset such as interest, depreciation and all the costs related to acquisition. (Miller & Upton 1976). Brealey et al. (2012) define lease value as follows:

$$Value\ of\ lease = financing\ provided\ by\ lease - value\ of\ equivalent\ loan$$

In which, an equivalent loan refers to loan, which commits the firm with similar cash flows as the finance lease contract. Strictly speaking, leases are transactions, in which the lessee can only gain at the expense of the lessor. An exception is a case in which the lessee does not pay taxes or its tax rate is lower than the lessor's tax rate. Under these circumstances, the lessee can get a beneficial lease deal from a tax-paying lessor since the lessee can get both the interest and depreciation tax shields in an early phase of the lease. (Brealey et al. 2012).

Especially the older studies explain the popularity of leasing primarily because of tax benefits compared to buying (Miller & Upton 1976; Myers et al. 1976; Johnson & Lewellen 1972). The tax argument states that lessees are willing to transfer their unused tax shields to the lessors who can fully leverage it. Since the specialized financial institutions acting as lessors can gain full benefits of the tax shields, they can lease assets with lower rental rates to the lessee. Myers et al. (1976) argue that tax rates are different to lessors and lessees under some conditions like accelerated depreciation and high interest rates. These conditions enable lessors to provide lease financing with better terms. Graham et al. (1998) provide evidence that corporate tax status is closely related to financing decision. Their study suggests that operating leases have negative relation to tax rates, whereas debt level is positively correlated with tax rate implying that firms with low marginal tax rate lease more. Vice versa, firms with high marginal tax rate borrow more as the interest rates are tax deductible supporting the hypothesis of transferring tax shield from lessee to lessor, who in turn can fully utilize it. Miller and Upton (1976) claim that the amount of lease payments must be structured to compensate lessor for the opportunity cost of capital and asset's depreciation.

In an optimal scenario, lease contract is affordable for the lessee while remaining profitable for the lessor. In European context, for example under Finnish accounting rules, tax authorities generally do not approve lessee's depreciation charge as a tax-deductible item. Instead, Finnish accounting standards state that tax benefits related to depreciation belongs to the lessor. The lessee can deduct the annual lease payment. Under the new IFRS 16 standard, tax deductibility is amended. (Troberg 2013). IFRS 16 and its implications will be examined later in this study. Some proportion of the total lease financing can be explained by lease financier's ability to manage assets more efficiently. If the lessor is more efficient in managing

fixed assets than the lessee is, it is only rational to lease rather than buy the asset. Following this logic, the world's biggest aviation lessors like GE Capital, International Lease Finance Corporation or BBAM are more efficient in managing their fleet. They can create win-win situations for both the lessor and the lessee. The biggest aircraft lessor in 2014, Ge Capital Aviation Services had a total number of 1692 fleet according to Airline Rankings[1]. The huge amounts of fleet implies that they must be efficient in the process of matching airlines with a proper aircraft.

Finance and accounting literature has focused largely on the tangible, financial factors in leasing research. Vargas and Saaty (1981) argue that these studies do not comprehensively explain the popularity of leasing. They argue that, assuming perfect competition in the market, only under the following two theoretical conditions, leasing is proven to be less expensive than buying. Firstly, *lessor must have lower marginal cost of capital than the lessee does*. Secondly, the *lessor has to possess substantial economies of scale in providing leasing services*. These conditions are rarely met in lease contracts. Thus, there must exist significant intangible benefits explaining why firms enter into lease contracts as often as they do. Many large corporations use considerable amount of leasing despite the above conditions do not hold as the corporations have, in fact, larger economies of scale and negotiation power than the leasing company does. Hence, corporations do not only calculate net present values and cost of capital. Instead, they use a whole bunch of different factors in assessing lease-or-buy cases. (Vargas & Saaty 1981).

Recent studies provide a list of other important determinants steering managers' lease-or-buy decisions (Beatty et al. 2010; Gavazza 2010; Frecka 2008). In these studies, the simple NPV framework is expanded to finding other factors that have direct relationship to lease-or-buy decisions. Contemporary lease research associates capital constraints with leasing. Firms prefer leasing to buying when having limited access to capital. (Vargas & Saaty 1981; Eisfeldt & Rampini 2009; Beatty et al. 2010). Thus, especially small firms are active users of lease financing since they often face high cost of debt. Capital constrained firms cannot get credit with reasonable terms compared to cost of lease contracts. Sharpe and Nguyen (1995) suggest also that firms with high costs of external funds prefer leasing to finance their fixed capital investments. They argue that non-dividend paying firms with low amounts of cash use much

[1] Available online at: http://topairlinesrankings.blogspot.fi/2014/02/top-ranking-50-biggest-aviation-lessors_14.html

more leasing compared to high rated firms because otherwise they would face high premiums in the debt market. This is in line with the discovery by Fazzari et al. (1988) arguing that firms with financial constrains tend to rely on internally created cash flows because they cannot borrow with reasonable interest rate leading to added lease preference.

The findings of Beatty et al. (2010) are in line with the prior discoveries. They report that firms with low accounting quality tend to lease rather than buy with secured debt since they have limited access to capital. Vice versa, borrowers with better accounting quality use more public debt market (bond market) because the lenders do not demand the similar amount of monitoring (Bharath & Sunder 2008). Beatty et al. (2010) conclude that reporting quality affects the balance between leasing and owning. Lessors seem to have better tools and control rights to overcome the lessee's financial constraints than traditional debtors do, and thus they can lend more even to firms with financial constraints. In their study, information asymmetry is covered using accounting quality and the lenders motivation for due diligence. Furthermore, firm size is associated with leasing. Small firms are often more likely to lease as they are also more capital constrained. (Beatty et al 2010). They lease about half their capital. Considering the vital role of small firms in economies, it is essential to understand the implications of leasing. Hence, theory of leasing predicts that the propensity to lease is highest in small and financially distressed firms with low marginal tax rates. (Cornaggia et al. 2012).

Other explaining factors for increasing leasing activity among many industries are, for example, fooling creditors with off-balance sheet financing and simply the general convenience of leasing compared to ownership (Myers et al. 1976). The leasing industry itself has made a strong case on the convenience argument. They suggest that by leasing, firms can retain capital and cash. Academic research, for example Brealey et al. (2012), disagrees with the claims such as leasing "preserves capital" or "conserves cash". Lessors suggest that leasing increases debt capacity of company compared to secured loans argue that they are good at creating win-win-situations between counterparties. Eisfeldt and Rampini (2009) show evidence suggesting that lessors have some truth in their statements. According to their findings, lease financiers are, in fact, more efficient in managing capital. Repossession of leased asset is easier than foreclosing collateral of a secured loan implying higher debt capacity. Leasing increases agency costs by separating user and owner of the asset. Traditional financial institutions are more active monitoring client, leading to higher costs to reduce agency costs. Banks have stricter rules in overseeing their lending, whereas lease financiers have a direct collateral in their leased asset, which it can liquidate in case of payment problems. Lessors can overcome agency costs with

fewer resources as they are excellent in the process of repossession and finding new lessee for the asset. Thus, due to the repossession advantage of leasing, lessors are, in fact, able to extend more capital than secured lender against the same underlying asset. (Eisfeldt & Rampini 2009).

Smith and Wakeman (1985) concludes that the net benefits of leasing are not uniform. Instead, the success of a lease deal depends on the industry, as well as firm-specific details. They list some conditions under which firms prefer leasing. According to the academics, leasing is more likely to occur when the asset is not specialized for the firm, the value of the asset is less sensitive to use and maintenance decisions, the lessor has market power, the lessor has comparative advantage in asset disposal and management compensation contract is related to return on invested capital. Having significant economies of scale, leasing institution would be able to get better terms acquiring, for example, an aircraft fleet than an individual buyer. There are certain industries that are very lease intensive such as retail and air transportation. A big part of this concentration can be explained by the above incentives. (Smith & Wakeman 1985).

The aforementioned industries have high fluctuations in business and firms need to adapt quickly. Moreover, aircrafts and retail stores are liquid assets and of standardized nature, which creates favorable environment for lessors. Leasing increases with liquidity of the underlying asset. (Cornaggia et al. 2012). Logically, the more liquid the asset is, the easier is redeploying it. Asset liquidity is vital especially in case of operating leasing because the assets have to be redeployed many times during their economic life (Gavazza 2010). The asset is liquid if it does not only have value for the specific firm. (Alchian 1978). Gavazza (2010) finds out that firms with more liquid assets use, in fact, more operating leasing. According to him, liquid assets decrease the cost of external financing. In addition, these companies have shorter operating lease periods and lower mark ups. As instead, capital leases tend to be longer under liquid assets. Gavazza's sample is from air transportation industry, which is also at focus in this study.

Finally, Vargas and Saaty (1981) argue that there is not universal solution to the lease-or-buy problem. Rather, there exists a unique set of firm-specific factor, economic and non-economic reasons to lease varying case by case. Professional accounting firms such as PricewaterhouseCoopers and KPMG suggest that the most significant intangible decision factors in the lease-or-buy setup seem to be the easiness of leasing and the flexibility to streamline business operations by not needing to own assets that are not of strategic importance. Hence, leasing provides lessees with substantial managerial flexibility. (PwC

2016; KPMG 2016). Form the lenders perspective, leasing is often more secure and convenient compared to secured debt. Thus, specialized leasing companies lease out larger quantities than traditional lenders, secured by similar assets. Especially financially constrained firms warmly welcome the opportunity to increase their debt capacity by leasing. (Eisfeldt & Rampini 2009).

In conclusion, the academic research notes many economic as well as practical reasons to use leasing instead of owning an asset. The lease-or-buy equation includes many variables of significant importance. Despite all these logical explanatory factors, a significant reason to use leasing is the possibility for off-balance sheet finance. Off-balance sheet feature of operating leasing is investigated in the following sections. On the light of the above studies, it is not surprising to see leasing gaining popularity over time, especially among companies with restricted capital. Moreover, global trends such as outsourcing allows firms to focus more on their core businesses, increasing also the tendency to lease instead of owning. Firms are more willing to let off control of the less important activities. All these findings motivate investigating, whether information asymmetry is associated with firms' tendency to lease assets, assuming information asymmetry would have similar effect than capital constrains.

2.2 Operating leases and off-balance sheet financing

Apart from the generally agreed economical and practical reasons to rely on lease financing discussed in the previous section, accounting literature agrees that big proportion of the popularity of operating leasing is accredited to off-balance sheet element of operating leasing. The accounting treatment of operating leasing has been one of the most long-standing and notable discussion in the field of accounting. Authorities argue that managers use long-term operating lease commitments intentionally in avoiding capitalization of firm's assets on balance sheet. Generally Accepted Accounting Principles (GAAP) describe operating leases as short-term rentals. Still, many industries report extremely high amounts of noncancellable operating lease commitments for several years into the future implying that operating leases are effectively for long-term use. In fact, firms report way higher amounts of operating leases than capital leases. The obligations under operating leases are not formally recognized. However, financial statement users can capitalize these obligations using mandated footnote disclosures of future rental payments, and approximate the balance sheet and income statement as if all leases were capital leases. Capitalization of operating leases in the balance sheet, has a very noteworthy impact on many key figures measured from balance sheet and income statement. (ILW 1991, 1993, 1997).

Giving true and fair view is one of the key purposes of accounting. Question remains, whether the current lease accounting standards provide financial statement users with this true and fair view. (Scott 2008). Understating the impact of leasing liabilities potentially leads to wrong conclusions in firm valuation, gearing and riskiness as well as management performance. To achieve true and fair presentation of firm's financials, accounting professionals need to follow the substance over form principle, which should be primary guide for the accounting practitioners. Under this principle, operating leases should be recorded as assets and liabilities, as if they were in substance asset purchases rather than rental contracts. (Troberg 2013). Operating leasing is one of the most popular off-balance sheet finance tools. Logically, the higher the proportion of a company's total assets is under operating lease contracts, the more significant impact capitalization has. Especially, in lease intensive industries such as retail and aircraft industry, the off-balance sheet activities should be under careful scrutiny when analyzing company's financials. (ILW 1991; Gavazza 2010).

Managers prefer operating leasing because they do not need to lock capital in the balance sheet for long period. It has been a common practice in many industries to record most lease contracts as rental agreements albeit they are, de facto, capital leases. Despite actions by accounting standard setters, firms seem to find a way to report most of lease contracts as operating leases. Circumventing the capitalization rules gives managers flexibility as they can keep some financial obligations out of the balance sheet. Streamlining balance sheet might be connected to managers' incentives to improve performance and leverage ratios. Some part of their compensation may be tied to ratios such as ROA and ROE, which can be improved by using off-balance sheet assets. (ILW 1991, 1997; Cornaggia 2012). Even though operating leases are considered in risk assessments, they are not incorporated in executive compensation (ILW 1993). Firms having large operating lease commitments use much more leverage than it appears at a first glance. Furthermore, they also need more assets than recognized on balance sheet to create the revenues in income statement. Thus, financial figures calculated directly from the financial statements might be misguiding under heavy use of operating leases. (ILW 1991).

Cornaggia et al. (2012) studied the proportion of operating leases that is attributed to off-balance sheet finance possibility. Their hypothesis was that firms attempt to strengthen their balance sheet by using operating leases. Their large sample consisted of all companies available in Compustat database from 1980 through 2007. Based on their research, industries that do not have the expected traditional benefits of leasing are still actively using operating

leasing. Over time, an increasing number of firms want to take advantage of the off-balance sheet debt. Industries lacking valid economic benefits of leasing are signing operating lease contracts more than ever. The researchers suggest that firms have become more motivated to report conservative balance sheet and expand their debt capacity. Operating leasing is essential vehicle for those purposes. Moreover, their cross-industry analysis suggests that off-balance treatment of operating leases influences the propensity to lease assets. Firms can manage restrictive debt covenants by using operating leasing. Somewhat surprisingly, least financially distressed firms with high growth options and high level of R&D intensity trend exceedingly toward off-balance sheet financing. Thus, the traditional economic determinants like marginal tax rate and tax shields do not explain the amount of leasing very well. The unexplained off-balance sheet leasing (the amount, which cannot be explained by the common theoretical economic determinants) diminishes under scrutiny of institutional investors and SEC, implying that managers use off-balance sheet finance to sugarcoat balance sheet but diminish their actions under investigation. (Cornaggia et al. 2012).

Similarly, Frecka (2008) points out that firms actively avoid balance sheet recognition by using operating leases. He argues that it is unethical, blaming the rule-based lease accounting under FAS supporting strongly the proposed changes in standards. According to Frecka, the rule-based accounting does not capture the spirit of the standard. Currently, firms violate the intent of lease accounting rules keeping assets and liabilities off the books. The issue is not only the distinction of capital and operating leases. Firms are even creating synthetic lease contracts when necessary. These complex vehicles can be created using Special Purpose Entities (SPEs). Synthetic lease is a contract that captures the benefits of both operating and capital lease. It allows for an off-balance sheet treatment in financial reporting, but enables capital lease treatment for tax purposes. (Frecka 2008). Capital leases have tax benefits compared to operating leases in the early life of the lease when the interest payment is high (Duke et al. 2009). Grossman and Grossman (2010) suggest that the IASB's standard, IAS 17 Leases, is more principle-based making it more difficult to play around the rules, and thus considered superior to FASB's standard.

Fortunately, for professionals with the proper skillset, it is possible to overcome the false interpretation of operating leases using valid capitalization method. Lipe (2001) argue that academics and analysts are well aware that operating leases create large off-balance sheet commitments. Professionals have the knowledge and tools to capitalize and price them accordingly. It seems to be the case that by using operating leasing it is impossible to fool

lenders or institutional investors. This might not necessary be the case among private investors and nonprofessional users of financial statements. Next section will discuss more the proper way to capitalize off-balance sheet operating leases.

2.2.1 Constructive capitalization

As mentioned earlier, operating leases are recognized as rent expense in income statement rather than as assets and liabilities in the balance sheet whereas capital leases are capitalized in the balance sheet. To ensure the comparability of financial statements across industries and businesses, it is essential to capitalize long-term operating leases similarly to capital leases. ILW (1991, 1997) provide financial statement users with a model to adjust balance sheet by capitalizing operating lease commitments to overcome the distortions. Following their method, financial analysts can estimate the amount of long-term off-balance sheet operating lease commitments. Thus, the method provides the amount of debt and assets that would have been reported if the operating leases were capital leases. Finally, their method of constructive capitalization allows recalculating key financial figures as if operating leases were capitalized at their inception, undoing the unwanted features of operating leases. (ILW 1991). Constructive capitalization is used in the empirical part of this study. By capitalizing operating leases, all lease contracts are recognized similarly regardless of their classification.

Constructive capitalization method is widely used in accounting literature. Despite its strong presence in the academic research and the sophistication of the model, many practitioners, such as financial analysts, use more straightforward methods. Alternative method to estimate the amount of off-balance sheet leases is factor method. It is much simpler than constructive capitalization. There are many variations of factor method (sometimes referred as Heuristic method), but in its simplest form, the annual operating lease rentals are multiplied by a factor such as eight to get an approximation of the off-balance sheet items. Factor method is not theoretically very sound, thus rarely used in academic papers. Still, it is very simple to use and enables the analyst to gain a rough estimate of the noncancellable operating lease commitments. Standard and Poor's used factor method assessing lease commitments earlier, but switched into constructive capitalization in 2000. Some practitioners argue that constructive capitalization is too time consuming to conduct. (Barone et al. 2014). Moreover, heuristics method has higher association to shareholder risk than constructive capitalization as it is widely used in capital markets because it computationally less costly and much quicker to

apply (Bennett & Bradbury 2003). This study focuses on the more accurate capitalization method introduced by ILW.

Constructive capitalization requires estimating the unrecorded amount of debt and assets. The amount of assets is derived from the liabilities, which has to be measured first. To estimate the unrecorded debt, the model requires information of the remaining future cash flows arising from minimum lease payments of noncancelable operating lease commitments. Firms disclose these cash flows in footnotes of financial statements by SFAS13 and IAS 17. For the first five years, excess of one year, firms display an accurate amount of cash flows. The amount after the fifth year is disclosed as a lump sum. By discounting future cash outflows to the present and summing them, the model gives an accurate estimate of the total amount of leasing liabilities. ILW uses an estimate of the firm's incremental secured borrowing rate as the discount factor. Further, the model requires an estimate of the remaining life of the leased asset. Hence, the present value (PV) represents the remaining noncancelable obligations (PV of debt) under operating leases. These cash flows represent the same minimum lease payments, which would occur had the leases been classified as capital leases at their inception. (ILW 1991).

After estimating the unrecorded operating lease liabilities, the second step is calculating the off-balance sheet assets. Calculating unrecorded assets is somewhat more cumbersome than liabilities as the model requires additional information on weighted average total life of the leased assets and depreciation method. ILW assumed straight-line depreciation method, which is realistic as most of the long-term leased assets are buildings and equipment. An indication of the weighted average total life and the remaining life of leased asset can be obtained from the trend in lease payments and their descriptions, disclosed in the footnotes. If the yearly minimum payments are increasing rapidly, it is safe to assume that lease portfolio is at relatively early stages (weighted average percentage of the original life < 50% expired). If the payments are steady year to year, the portfolio is somewhere in midpoint of its timeline (50% expired). Decreasing payments imply that portfolio is more mature (>50% expired). The amount of unrecorded asset varies depending on the rate of expiration. ILW simply assumed that leases are 50 percent expired. (ILW 1991).

Below is displayed a snapshot from the latest financial statements of Delta Airlines to illustrate how the lease cash flows are disclosed in the 10-K supplemental data. In the written description of leases in the footnotes, Delta Airlines give an overview of the nature of their lease obligations stating for example depreciation method, items leased and renewal options as

well as the cash outflows for the coming years. They use straight-line method depreciating operating leases similarly to the assumptions in constructive capitalization. It is interesting to note that total operating leases in Table 1 (13,095 million $) equals almost 35 times the amount of capital leases presented in Table 2. The story is similar in a majority of firms using leasing; operating leases dominate the total amount of leases. Second intriguing observation is the trend in minimum operating lease payments in Table 1. Payments are steadily declining implying that Delta's lease portfolio is already quite mature. Another notice from their disclosures highlights the importance of examining operating leases; total amount of operating lease payments (13,905 million $) is more than twofold compared to amount of long-term debt and capital lease (6,201 million $) on-balance sheet in year 2016. Hence, it would be impossible to conduct meaningful analysis of Delta Airlines' gearing without considering operating leasing disclosed in the footnotes. After the fifth year, firms report a thereafter portion, which as lump sum of the expected future lease payments.

NOTE 7. LEASE OBLIGATIONS

> ***"We lease aircraft, airport terminals, maintenance facilities, ticket offices and other property and equipment from third parties. Rental expense for operating leases, which is recorded on a straight-line basis over the life of the lease term, totaled $1.3 billion for the year ended December 31, 2016 and $1.2 billion for the years ended December 31, 2015 and 2014. Amounts due under capital leases are recorded as liabilities, while assets acquired under capital leases are recorded as property and equipment. Amortization of assets recorded under capital leases is included in depreciation and amortization expense. Our airport terminal leases include contingent rents, which vary based upon facility usage, enplanements, aircraft weight and other factors. Many of our aircraft, facility and equipment leases include rental escalation clauses and/or renewal options. Our leases do not include residual value guarantees and we are not the primary beneficiary in or have other forms of variable interest with the lessor of the leased assets. As a result, we have not consolidated any of the entities that lease to us. "***
>
> *(Source: Delta Airlines Financial Statement 2016)*[2]

[2] Available at: http://www.annualreports.com/Company/delta-air-lines-inc

Table 1. Minimum operating lease payments. Source: Delta Airlines Financial Statement 2016

Operating Leases

(in millions $)	*Delta Lease Payments*	Contract Carrier Aircraft Lease Payments	Total Lease Payment
2017	1,302 $	270 $	1,572
2018	1,194	249	1,443
2019	1,084	220	1,304
2020	962	171	1,133
2021	766	96	862
Thereafter	6,533	248	6,781
Total minimum lease payments	11,841 $	1,254 $	**13,095**

Table 2. Minimum capital lease payments. Source: Delta Airlines Financial Statement 2016

Capital Leases

(in millions $)	Total Lease Payment
2017	145
2018	85
2019	60
2020	43
2021	24
Thereafter	21
Total minimum lease payments	**378**

Figure 2 below illustrates the general life cycle of a lease contract and what happens to present value of operating lease assets and liabilities from inception to termination. It illustrates how the amount of unrecorded assets varies during its lifecycle. The linear line with observations A_1, A_2 and A_3 represents the book value of unrecorded operating lease asset. The asset value line simply linearly decreases toward the termination of the lease contract when assets are depreciated using straight-line method. Unrecorded liabilities decline with varying speed. After the inception of the lease contract, the share of interest rate of the whole rent payment is bigger. Therefore, the principal declines slowly in the beginning and very quickly close to the termination as the interest payments get less significant proportion of the monthly lease payments. Hence, the liabilities curve, with observations L_1, L_2 and L_3, remains higher than the asset value line on y-axis throughout the lease's lifetime. The present value of the unrecorded debt is higher at all periods because the principal reduces at a slower rate than straight-line depreciation of asset. Only at the termination, the liabilities curve catches up the asset line. This implies that unrecorded debt caused by off-balance sheet

lease commitments is usually greater than equivalent asset. ILW found out that most of times the estimated amount of unrecorded assets is on a range of 60 to 80 percent of the unrecorded debt. ILW suggest using 70 percent as a rule of thumb while estimating the asset to liability ratio. (ILW 1991).

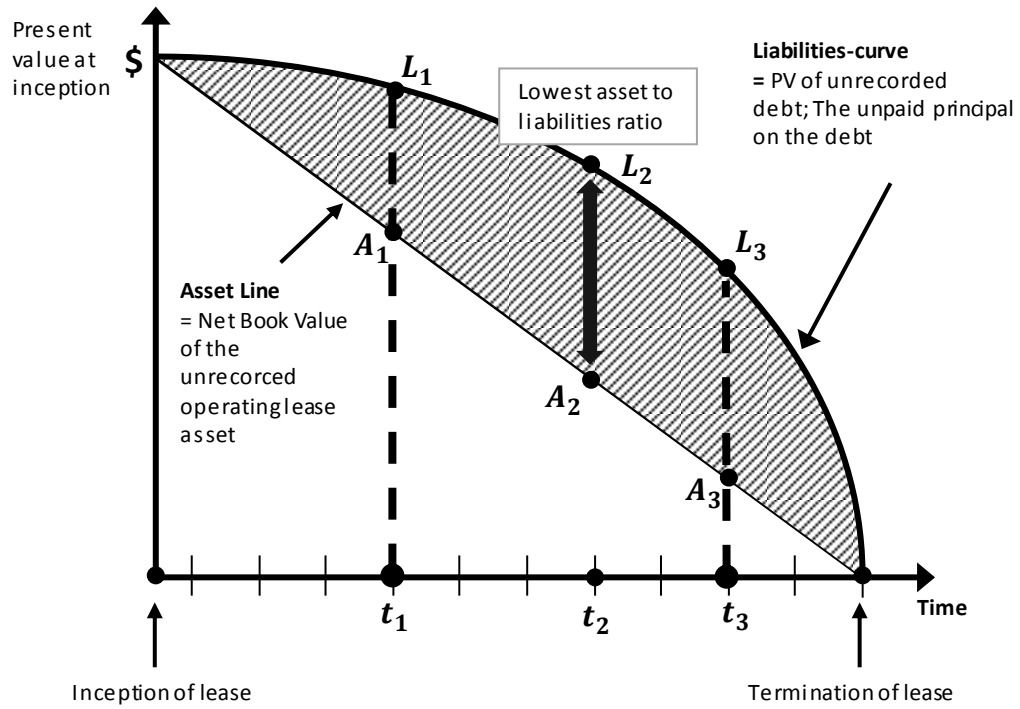

Figure 2. *Relation between unrecorded lease asset and liability. Adopted from Imhoff et al. (1991 Figure 1)*

The impact of constructive capitalization is more significant on debt rather than asset side of the balance sheet. Assuming most lease portfolios of stable businesses are somewhere around halfway of their economic life, the gap between unrecorded liabilities and assets ($L_2 - A_2$) is considerable. In fact, the carrying amount of lease asset that has depreciated 50 percent range between 59 and 84 percent of the lease liability. Asset to liability ratio depends on expiration percent of lease contract, estimated total lease life and marginal interest rate. In time t_2, the gap between liability and asset ($L_2 - A_2$) is greatest. Hence, at this point, asset to liability ratio reaches its minimum value. (ILW 1991).

Figure 3 below further illustrates the effect of capitalization on profit. Operating lease expense remains steady over the lease lifecycle, as it is a fixed rental payment. Capital lease expense can be decomposed into interest and principal part. Hence, total capital lease expense is bigger than operating lease expense from the inception until t_2. After that, it declines steadily since the proportion of principal payment gets bigger. Point t_2 represents the breakeven point where capital lease expense equals operating lease expense. Usually this breakeven occurs after

53-63 percent of the asset has been depreciated. Finally, at this point, the income statement effect is zero as the cost of the two methods are identical. (ILW 1991).

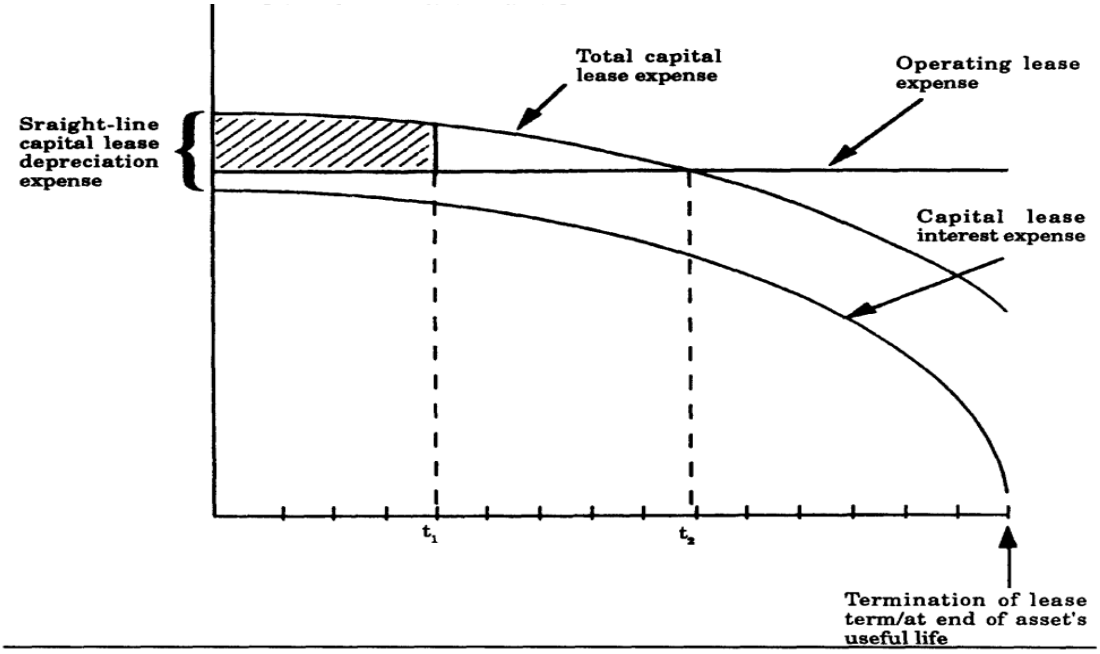

***Figure 3**. Relation of operating and capital leases over time. Source: ILW (1991, Figure 2)*

Constructive capitalization requires some assumptions. Firstly, the off-balance sheet assets and liabilities must equal 100 percent of the present value of future lease payments at the inception of the lease contract. Secondly, they must also equal zero at the termination of the lease. Thirdly, straight-line depreciation method must be applied. Moreover, ILW used additional assumptions in their cross-industry comparison presuming fixed interest rate of ten percent, 15 years average remaining life of the operating leases, cash flows occurring at year-end, effective tax rate of 40 percent and zero net income effect for the current period. (ILW 1991).

While analyzing the off-balance sheet operating leasing liabilities, financial analysts should probably update some of the assumptions to meet the changes in financial environment. Nonetheless, the assumptions remain mostly realistic. Of course, choosing a proper discount factor is many times more of an art rather than science. The IASB instructs lessees to use implicit interest rate as the discount rate. If this is not practicable to determine, they should use the lessee's incremental borrowing rate. (IAS 17.20.) ILW (1997) suggest using implicit rate in the firm's capital leases. Some firms disclose this rate voluntary in lease footnotes. In the case of Delta Airlines, the rate is not disclosed but it can be estimated easily.

ILW (1991) assumed in their first paper that the impact of constructive capitalization to income statement is negligible, implying that most lease portfolios are about 50 percent expired or at point t_2 in Figure 3. In this point, the change in EBITDA and net profit would be minimal. Thus, they only examined the balance sheet effects of lease capitalization. In their latter leasing papers (1993, 1997), ILW admitted that it is an unrealistic assumption and made their model complete addressing also the income statement effects. The key takeaway from the second paper in 1997 is that to capture the full effect of off-balance sheet financing, it is of a great essence to adjust both the numerator (income statement) and the denominator (balance sheet) before calculating post capitalization figures such as return on assets or return on equity. While calculating ROE, capitalization of operating leases systematically leads to smaller denominator, as the shareholder's equity will decrease. Whereas in case of ROA, the denominator increases as firm's present more assets on balance. Still, the total impact of capitalization is ambiguous because the net profits will change as well.

$$ROA = \frac{Net\ profit}{Assets} \qquad and \qquad ROE = \frac{Net\ profit}{Equity}$$

Adjusting income element in addition to assets and liabilities will influence the post-capitalization results. Constructive capitalization has potentially significant effect on operating and net income. ILW (1993) displayed a median decrease to net income of 22 percent and 34 percent increase in operating income after capitalization of operating leases. Hence, it is essential to adjust both balance sheet and income statement to capture completely the effects of constructive capitalization. Adjusting only balance sheet would violate the clean surplus relation (Feltham & Ohlson 1995), which is considered as the cornerstone of modern financial reporting and lead to inconsistency in accounting measurements. Using retail company K-Mart as an example, the researchers show that unadjusted figures might sometimes be more accurate than partially adjusting (only balance sheet). K-Mart's fully adjusted ROE increases 9 percent from 1994 to 1995, while the reported ROE decreases for 39 percent. The ROE adjusted for balance sheet effects only decreases 36 percent. Thus, to ensure relevant analysis of the profitability figures, it is recommended to adjust both the bottom line and assets. There are significant differences in many performance and risk measures depending on the extent of adjustments. (ILW 1993)

Constructive capitalization has received some criticism of its usefulness, as it assumes that all operating leases should be capitalized but only a portion of operating leases represent unrecorded assets and liabilities in lease portfolios. Thus, not all operating leases should be

then capitalized. Still, constructive capitalization remains the preferred tool, as there is no method to separate the cash flows that should be capitalized from the rest. (ILW 1997). Constructive capitalization has dramatic impact on lease intense firms. Evidence from the UK suggests that the off-balance sheet operating lease liabilities can be in an extreme case 90 times greater than debt reported in the balance sheet (IASB 2016). These material effects will be presented more in-depth in the next section.

2.2.2 Financial analysis of operating leasing

Many studies point out that operating leasing potentially distorts financial ratios. This section displays the material impact of operating leasing on several financial ratios used in assessing firm's financial strength, management performance and investment return. (Durocher 2008; Imhoff et al. 1991; Goodacre 2003). From a capital market perspective, it is suboptimal that firms can actively influence on the evaluation of their financial performance using off-balance sheet tools. It is worthwhile to study the potential pitfalls of financial analysis. Operating leasing causes one of the most cited distortion in accounting research.

Nelson (1963) did pioneering work by adjusting balance sheets of 11 US companies using voluntary lease disclosures in his factor model. Measuring the present values of these off-balance sheet assets and liabilities, he noted 30.2 percent increase in assets and D/E increase of 94 percent. Additionally, the company rankings changed post capitalization. Ashton (1985) extended Nelson's study in the UK context, reporting noteworthy post capitalization changes in gearing but not in performance figures. Almost all modern impact studies on operating lease capitalization use variations of constructive capitalization method by ILW (see Goodacre 2003, Beattie 1998; Fülbier et. al 2006; Durocher 2008) with some minor adjustments instead of factor method. Empirical evidence strongly supports the hypothesis that constructive capitalization significantly influences financial measures. The evidence is quite similar from all around the world.

ILW (1991, 1997) find evidence in their studies on US companies suggesting that operating leasing skews some commonly used performance and debt measurements. In their first paper (1991), ILW analyzed the balance sheet of McDonald's. Restaurant chains rent most of their business locations using operating leasing, thus capitalization should have significant impact. Indeed, the researchers report 9 percent decrease in ROA and 30 percent increase in D/E ratio after lease capitalization. Furthermore, they use larger sample of matched industry pairs representing high and low operating lease use displaying very material difference among

both high lessees as well as low lessees in ROA and D/E. Among high lessees, they report average decrease in ROA of 34 percent and average increase as much as 191 percent in D/E. However, capitalization had impact also on low lessees, with an average increase in D/E of 47 percent and ROA decline of 10 percent.

Capitalization results are similar in the United Kingdom. Beattie et al. (1998) display evidence that constructive capitalization of operating leases significantly increases both sides of balance sheet as well as many financial figures. Their sample consisted of 300 listed UK companies. The average unrecorded long-term liability was 39 percent of the total long-term debt while the unrecorded assets were 6 percent of total assets. Further, they addressed very significant post capitalization changes to nine financial figures under inspection. Capitalization had impact on profit margin, ROE, ROA, asset turnover, gearing ratios and interest cover. Profit margin changed on average +12.1 percent, ROA -10.8 percent and gearing as much as +206 percent in their sample. In addition, company performance rankings changed from pre capitalization to post scenario. In line with prior research, the results are more dramatic in lease-intense industries such as service sector. (Beattie et al. 1998)

Also Goodacre (2003) analyzed constructive capitalization in the UK focusing on retail sector. He states that off-balance sheet operating leases are 3.3 times higher than on-balance sheet long-term debt in his sample, implying that it is an essential source of finance. Goodacre displayed median post-capitalization increase in operating profit of 23 percent while net income effect was -7.7 percent. Again, his conclusion is that off-balance operating leasing might cause severely incorrect interpretation of firm's risk level and performance without proper capitalization procedure. He suggests that capitalization of operating leases has economic consequences if performance is judged against an absolute benchmark, for example, in context of loan covenants or executive compensation schemes. Goodacre highlights managers' responsibility to act according to spirit of the accounting standards and not intentionally roll over short-term lease contracts in order to keep assets out of the balance sheet. Moreover, he argues that capital leases are essentially immaterial, observing that the amount of operating leases are, on average, 37 times the amount of capital leases in the UK. Yan (2002) estimates that the similar figure in the US retail sector in 1997 is 16 times the amount of finance leases. Considering the significant increase in the popularity of leasing, these ratios might have further increased since then.

Fülbier et al. (2006) find less dramatic impact in their sample of 90 German firms. They argue that capitalization affects industries such as retail and fashion whereas some industries

remain unaffected. The academics used both constructive capitalization and factor method in their study. They display 22% mean increase in D/E across different industries but less significant relative changes to return ratios. In retail and fashion, the relative changes are substantial while energy and construction provide little evidence of active off-balance sheet financing. Grossman and Grossman (2010) report increased leverage among their sample of 91 non-financial firms and decrease for current ratio. In their sample, the most active users of operating leases are airlines, drugstores and railroads.

Data from New Zealand points to similar direction. Sample of 38 listed companies provides evidence of the material impact of lease capitalization on many financial ratios such as ROA and D/E. Capitalization increases leverage and decreases liquidity and profitability ratios. Average increase in assets post capitalization is 8.8 percent whereas liabilities increase by 22.9 percent. (Bennet & Bradbury 2003). Tai (2013) shows that in his small sample of two restaurant chains based in Hong-Kong, capitalization leads to very large increase in debt to equity ratios and decline in return on assets. Adjusted ROA decreases by 62.9% and 46.9% while D/E increases as much as 1,214% and 743%. These are rather extreme results partially explained by very small, handpicked sample. Still, his findings highlight that in special cases, the results can be extreme. Durocher (2008) reports similar results from a sample of 100 largest Canadian listed companies. In line with the other studies, capitalization of operating leases decreases ROE, D/A and current ratio whereas ROA remains unaffected.

Duke et al. (2009) suggest that firms in the US are actively circumventing FASB's capitalization rules by exploiting the bright lines in the rule-based standard. Their sample of 366 firms avoided presenting on average 11.13 percent of their total liabilities on balance sheet. In the top quartile, the proportion was 34.24 percent. Furthermore, they found an average post-capitalization change in retained earnings of $131.79 million, which is equal to -7.14 percent of the total reported earnings. Finally, the researchers report decrease in net income from lease capitalization and increase in D/E, as expected. They conclude suggesting that despite regulatory efforts to prevent firms using special purpose vehicles for off-balance sheet finance stated in the Sarbanes and Oxley Act, firms simply use operating leases to improve their solvency ratios, performance measurements as well as returns. (Duke et al. 2009).

Table 3 below gathers the consensus results of numerous constructive capitalization studies. It displays the expected impact of capitalization of 10 financial ratios by providing arrow pointing to the expected direction in after capitalization figures. Further, the table

reflects the drivers of the given direction with a short explanation. In the case of ROE and ROA there are some mixed evidence because the direction of net income depends on how much of the lease portfolio is expired.

Table 3. Implications of lease capitalization (Adopted from Goodacre 2003, Table 2)

Ratio	Definition	Expected impact of capitalization	Explanation
Total assets	$\text{Total balance sheet assets}$	↑	• Capitalization increases assets on balance sheet
Debt	$\text{Total balance sheet debt}$	↑	• Capitalization increases debt on balance sheet
Equity	$\text{Shareholders' equity}$	↓	• Retained earnings decreases
Profit Margin	$\frac{EBIT}{Sales}$	↑	• EBIT increases
Return on equity (ROE)	$\frac{\text{Net profit}}{\text{Equity}}$	↑ or ↓	• Depends on the maturity of lease portfolio
Return on assets (ROA)	$\frac{EBIT}{\text{Total assets}}$	↓	• Increase in total assets > than increase in EBIT
Asset turnonver	$\frac{Sales}{\text{Total assets} - \text{current liabilities}}$	↓	• Increase in total assets leads to lower asset turnover
Gearing	$\frac{\text{Total debt}}{\text{Equity}}$	↑	• Total debt increases after capitalization
Interest cover	$\frac{EBIT}{\text{Interest expenses}}$	↑ or ↓	• Uncertain. Both EBIT and interest expense increase
Current ratio	$\frac{\text{Current assets}}{\text{Current liabilities}}$	↓	• Current liabilities increase more than current assets

Despite the above presented very material impact on many performance and risk measurements, operating leasing does not seem to have material impact on market perceptions. Capital markets are not fooled by off-balance sheet liabilities. Bond yields reflect off-balance sheet obligations as accurately as balance sheet debt. Market seems to assess correctly the credit risk independent of the chosen disclosure politics. Barone et al. (2014) provide a review of the literature on the market perceptions of off-balance sheet financing. They conclude that result are somewhat mixed. Still, majority of the studies find no differences in the perceptions of balance sheet and off-balance sheet debt. Sengupta and Wang (2011) show evidence that rating agencies are in fact extremely careful assessing off-balance sheet debt including operating leases. Hence, rating agencies treat operating leases similar to capital leases. Contrary, there is some evidence that off-balance sheet liabilities are not fully reflected in debt ratings. Further,

the common method for measuring the off-balance sheet operating leasing by discounting the future minimum payments (S&P method) seems to understate the market value of lease debt. (Lim et al. 2003). Ely (1995) examined the association between market's risk assessment and operating leases. She presents results indicating that capital markets use constructive capitalization in risk assessment of off-balance sheet debt. Thus, footnote disclosure of minimum operating lease payments has value for investors.

In a broad sense, the capital market is quite efficient in make the necessary adjustments regarding off-balance sheet lease activities. Thus, the market, as a whole, does not seem to care whether information is formally recognized or disclosed in footnotes. The lease accounting problem seems to relate more to individuals' assessments of company-specific performance, risks, compensation issues and investment return rather than being a market wide problem. Despite the specifics of lease contracts and accounting rules differ from country to another, the problem seems universal. Conclusion is easy to draw; operating leasing potentially distorts the perception of financial statements. Fortunately, the accounting standard setters have not ignored the lease accounting problem, as the new IFRS 16 Leasing standard contributes in tackling the problem. As we can see, the evidence gathered across the globe strongly supports IFRS 16, under which firms need to capitalize all leases. Contrary, Grossman and Grossman (2010) suggest that changes may negatively influence the leasing industry. Moreover, they argue that the proposed change will cause difficulties to access financing for some companies as many debt covenants are violated after capitalization of leases.

2.3 Development of lease accounting standards

The evidence pointing the flaws of current lease accounting standard is strong. To gain a broader perspective of the standard setting perspective, it is useful to take closer look on the historical development of lease accounting and try to understand the motivation behind standard revisions. The upcoming sections in this chapter will provide the reader with an in-depth analysis of the development of lease standards to understand how the evolution of accounting standards takes place. Under current standards, firms can split their lease contracts into smaller parts to avoid the mandatory capitalization triggered after meeting criteria for finance leases even when they, de facto, use leased assets similarly to a finance lease. By rolling over contracts as operating leases, their balance sheet is unaffected. Another leasing related problem is buyback leases, in which a firm sells its properties to another company and then buys all the services related to the sold property. By doing this little accounting gimmick, the

lessee might be able to, again, avoid showing anything in its balance sheet regarding to that property. (Troberg 2013).

Currently there are two important standard setting bodies: The Financial Accounting Standards Board (FASB) and the International Accounting Standards Board (IASB). They both developed leasing rules at their ends until 2006 before joining forces to create a global, unified leasing standard. Prior, the Boards have formatted their own standards with a different emphasis and focus, hence the outcomes are somewhat differing. Understanding the institutional setting of lease accounting is vital to gain complete understanding the accounting of lease liabilities and interpret the changes in the near future. In the following sections, current lease standards IAS 17 and FAS 13 are discussed. Finally, the transition toward new IFRS 16 and its implications are examined. New rules will have significant implications on firms reporting under IFRS.

A fundamental practice in accounting is substance over form principle. It stands for the idea that the primary goal in financial reporting should be presenting firm's financials in a relevant, complete and accurate manner rather than providing the legal form of transactions. Hence, the economic substance is more important than the legal substance. (Scott 2008). It should be the guiding principle while developing accounting standards and rules. Substance over form has implications in lease accounting as well. For example, IAS 17 for leases requires preparers of financial statements to consider the substance over form principle when classifying leases. As stated earlier, it is more principal-based than rule-based. Hence, lease contracts can be classified as capital leases even if the lease contract does not meet the formal requirements if the lease is, de facto, a long-term binding contract. (IAS17.10). Still, as the evidence from the earlier sections point out, these rules are very loose and managers have not been very active in "correcting" their operating leases into capital leases. FAS 13 is focused on giving the accounting professionals a detailed rulebook that should be followed precisely without much flexibility. (Frecka 2008).

The history of official lease contracts goes all the way back to the 1940s. Leasing started to get a significant financing tool towards the end of 1950s. With increased popularity among the US firms, standard setters had to act creating proper rules for lease treatment in accounting. Ever since the first written leasing rules 1949 by US regulators, an active discussion regarding lease accounting has been ongoing. (Beckman & Jervis 2009). Prior to that, there were no detailed rules since leasing business only played minor role in the world of corporate finance

and accounting discussion. Lease agreements were not recognized as assets or liabilities in the financial statements of lessees. Many leases, which previously had to be treated as rent expense, were now recognized in the balance sheet. This was the first move from standard setters to restrict off-balance sheet financing. (Troberg 2013).

Lease accounting standards have undergone already quite many revisions. Setting accounting standards is continuous discussion trying to keep up with the needs of accounting profession, capital markets and all the other stakeholders. The US regulators have had major impact on setting the rules for leasing. European and international standard setters did not contribute before 1982. Prior to that, US institutions such as Accounting Principles Board, predecessor of the FASB, and Securities and Exchange Commission (SEC) set the standards. In the US context, SEC is generally more interested on accounting from the investor's perspective whereas APB and other standard setting bodies are trying to set a right balance between simplicity, relevance and usability of accounting.

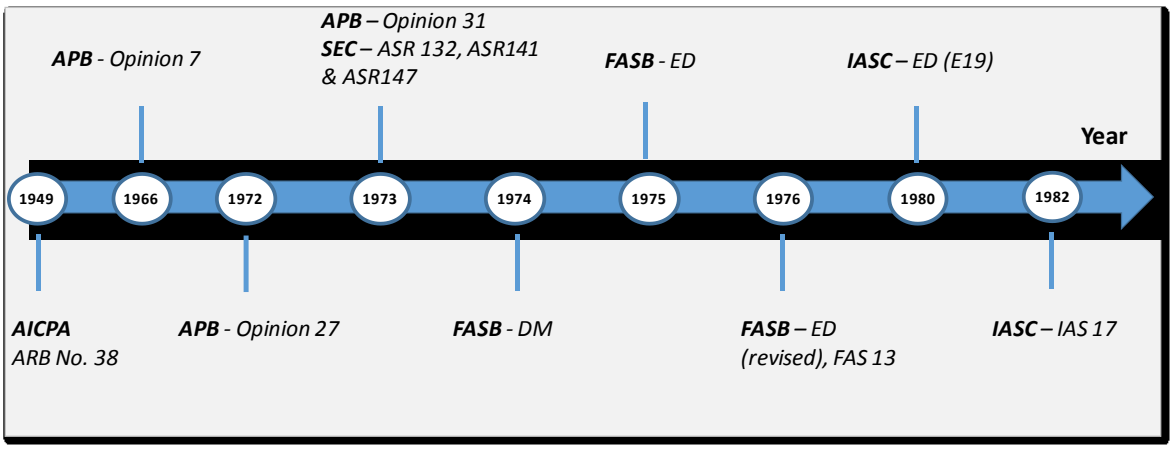

***Figure 4**. Timeline of leasing standards. Source: IASB (2007)*

Figure 4 displays timeline of the historical development of lease standards. The first lease accounting standard was released in 1949, when the Committee on Accounting Procedure of the American Institute of Certified Public Accountants (AICPA) issued ARB No.38. It suggested that leases were substitutes for ownership and mortgage borrowing. Under these rules, companies did not need to recognize leases on their balance sheet. The AICPA revised the rules in 1953 publishing ARB 43 because regulators were worried on the omitted liabilities under current standards. The AICPA required companies to disclose the following three figures related to leasing: the annual amounts payable, the periods over which amounts were payable and any obligations assumed or guarantees made in connection with the lease. (IASB 2007).

In 1962, the AICPA took further action to sharpen the regulation regarding lease contracts. They published Accounting Research Study (ARS), No. 4, Reporting of Leases in Financial Statements. In this new set of rules, the AICPA further developed the rules since leases were gaining popularity in the corporate world. Financial analysts were seeking further information on off-balance sheet liabilities. Standard setters redefined leasing as conveyance of rights not necessarily equivalent to ownership proposing that all leases should be recognized on the balance sheet at the discounted present value of cash flows that were to be paid for the property right. Further, recommending lessors to account for a transfer of property rights by transferring assets from fixed assets to receivables in the balance sheet. (IASB 2007).

Accounting Principles Board (APB) took part into the discussion by publishing their Opinion No 5, Reporting of Leases in Financial Statements of Lessee replacing ARB 43. Opinion 5 redefined whether long-term lease contract creates an equity component for the lessee. APB decided that leases, which solely create right to use property in exchange for rental payment, are executory contracts, which do not create equity for the lessee, and thus should only be disclosed in the footnotes. Still it did not thoroughly define equity, which left room for companies to recognize lease as an asset or use footnotes disclosure. Opinion No. 7 further developed the standards in 1966, contributing especially to lessor accounting. Opinion No. 7 required that leased assets should be reported separately from other assets because of their different nature compared to conventional loan or receivable nor are they similar to facilities in manufacturing or commercial operations. Further Opinion No. 27 defined criteria for transferring of usual ownership rewards and risks. Prior to that there were no explicit criteria determining whether an in-substance sale/purchase had occurred. A lessor could account for lease as a sale if i) collectability of payments was reasonably assured, ii) no important uncertainties regarding future costs remained, and iii) any of the following four conditions below was present. These conditions are already quite close the current criteria under FAS 13 and IAS 17.

1) The lease transferred title to the lessee by the end of the fixed, non-cancelable term
2) The lease gave the lessee the option to acquire the title for nominal cost by the end of the fixed, non-cancelable term
3) The leased property, or like property, was available for sale, and the present value of required rental payments for the fixed, non-cancelable term plus any related investment tax credit retained by the lessor was equal to or greater that the normal selling price or fair value of the leased property.

4) The fixed, non-cancelable term was substantially equal to the remaining economic life of the property.

In the 1970s, assets under lease contracts continued to grow. Firms were keen to finance investments in property, plant and equipment through leasing. SEC published three set of standards for lease accounting. ASR No. 132, Reporting of Leases in Financial Statements of Lessees, addressed the lessee accounting in case lessor had no real economic substance that can be obtained by the lessee. SEC concluded that if the lessor is created solely to serve lessee in its operations, the lessee should capitalize the arrangement since it is a purchase arrangement. In ASR No. 141, SEC decided that disclosure of non-cancelable leases might be limited to such leases, which have a non-cancelable term of one year or longer. In October 1973, SEC published ASR No. 147 criticizing APB's requirement to disclosure less than SEC had though would be necessary for investors. SEC provided much more extensive requirements for recognition and disclosure in lease accounting. In addition, SEC was the first authority to define financing lease. Under ASR 147, a lease is financing if it i) covers 75 percent or more of the economic life of the property or ii) has terms which assure the lessor a full recovery of the fair market value of the property at the inception of the lease. (IASB 2007).

So far, the most extensive rules for lease accounting were published in 1974 when FASB issued their Discussion Memorandum, An Analysis of Issues Related to Accounting for Leases. They were trying to determine the best conceptual model to decide when to capitalize leases. The different proposals included purchase model, legal debt model, property rights (asset) model, liability model and executory contract model. This clearly signals how fractured the leasing regulation had become. In 1975, the FASB continued developing leasing regulation by publishing their Exposure Draft, Accounting for Leases. In Exposure Draft, they chose two conceptual models for capitalization. The First one was a combination of the property right model and the liability model and the second purchase model or installment purchase model used in earlier standards. The Exposure Draft further fine-tuned criteria for finance lease. It also participated the discussion by providing concepts for discounting the minimum lease payments. The Exposure Draft turned into Statement No. 13, Accounting for Leases. The classification of leases to financial and operating leases took place in FAS 13. (IASB 2007).

In Europe, the predecessor of the IASB, International Accounting Standard Committee (IASC), came up with an exposure draft of Accounting for Leases in 1982 when they published the official standard IAS 17: Accounting for Leases. In its revisions made in 1996, IASC

addressed some issues like the classification of finance and operating leases. Even though it gave a clear signal that all leases with a maturity of more than 12 months should be capitalized, it decided postpone the decision in to the future. In 2003, IASB clarified some classifications of some leased assets such as buildings in order to create a single accounting treatment. Further (IASB 2007). Thus, the "leasing problem" has existed for a significant period. It also signals the difficulty of setting global standards. Thus, the accounting treatment of leases has been on table for decades. It is in fact one of the longest-running controversies, in which standards are claimed to fall short. Leasing standards are failing to capture the economic substance of a common operating leasing transaction. Finance and accounting studies have been long suggesting methods for estimating the off-balance operating lease commitments. (ILW 1997). Still it took decades to form a comprehensive new set of standard that such as IFRS 16, which strives to tackle the lease accounting problem. Setting accounting standards is always also a political process. Different stakeholders might have different interests. Hence, implementing a new standard is very lengthy process, which will always face resistance. Obviously, the leasing industry and heavy users of operating leasing are not extremely satisfied with the new rules (Jennings & Marques 2013).

2.4 Current institutional setting

The most important standards regarding leasing are FAS 13 and IAS 17. In this section, both will be discussed more thoroughly highlighting their similarities as well as the main differences. The definitions of leases stated in FAS 13 and IAS 17 are presented in Table 4 below. In addition, Table 4 gathers the capital lease criteria. As we can see, the definitions are almost identical. IAS 17 has one additional criteria for the unique nature of asset, which also leads to capitalization. However, substantial differences arise when the rules are executed in the firms as the application of FAS 13 capitalization rules is much more precise. IAS 17 aims to capture the nature of asset when classifying lease contract instead of strictly relying on the rulebook. Thus, FAS 13 does not leave room for the standard setter or auditor to use common sense as the standard is very unambiguous (Frecka 2008).

Table 4. Lease classification in FAS 13 and IAS 17 (FASB 1976; IASB 1982)

	FAS 13	IAS 17
Definition	*An agreement conveying the right to use property, plant, or equipment (land and/or depreciable assets) usually for a stated period of time.*	*A lease is an agreement whereby the lessor conveys to the lessee in return for a payment or series of payments the right to use an asset for an agreed period of time*
Criteria	• **Transfer of ownership** to lessee at end of term	• **The lease transfers ownership** of the asset to the lessee by the end of the lease term
	• **Bargain purchase option**: Provision that states that the lessee can purchase the asset from the lessor at the end of the lease for substantially less than the asset's expected fair value	• **The lessee has the option to purchase** the asset at a price which is expected to be sufficiently lower than fair value at the date the option becomes exercisable that, at the inception of the lease, it is reasonably certain that the option will be exercised
	• **Lease term equals or exceeds 75%** of estimated economic life of asset	• **The lease term is for the major part of the economic life** of the asset, even if title is not transferred
	• **Present value of minimum lease payments is 90%** of asset's fair value	• **At the inception of the lease, the present value of the minimum lease payments** amounts to at least substantially all of the fair value of the leased asset
		• **The lease assets are of a specialised nature** such that only the lessee can use them without major modifications being made

2.4.1 Leases under FAS 13 – Accounting for Leases

In November 1976, the FASB issued Statement No. 13, Accounting for Leases. The content was almost completely unchanged compared to the earlier Exposure Draft. In addition to the above four key criteria, there are two additional rules determining when the lessor treats lease as capital lease; Collectability of the payments required from the lessee is reasonably predictable and no important uncertainties surround the amount of costs yet to be incurred by the lessor under the lease. (FAS 13.8) If any of the four core criteria or two additional criteria are met, the lease contract is classified as a capital lease. FAS 13 requires lessees to use lower of implicit interest rate or the lessee's incremental borrowing rate in discounting. FAS 13 regulates how leases are classified for GAAP and tax reporting purposes. FAS 13 uses the term capital lease referring to the same concept as IAS 17 with the term finance lease. (IASB 2007).

One substantial difference under FAS 13 compared to IAS 17, is the incremental borrowing rate used. FAS 13 prefers the lessee's interest rate to borrow funds over a similar

period whereas IAS 17 recommends using the rate they would have to apply on a similar lease. Further, the present value of the rent payments is determined using the lower of implicit or incremental rate under FAS 13. In IAS 17, the implicit rate is always considered superior if known. There are differences regarding sale-leaseback transactions of real estate. Sale-and-leaseback is a transaction, where a firm sells an asset to and then leases it back for the long-term. In FAS 13, some of these deals are disallowed based on continuing involvement between parties. In IAS 17, leasebacks are considered with a broader principle of treating transactions "in accordance with their substance and financial reality and not merely with legal form" (IAS 17.13). This distinction highlights the fundamental difference between these two sets of standards. They both strive for reaching the same goal, but approach is different. Frecka (2008) suggest that principal-based standard is superior to rule-based one. Then again, a rule-based standard does not leave much room for interpretation, which increases the predictability of accounting treatment.

American standard has a significant problem when determining whether a lease contract meets the criteria for finance lease, for example, the rule for 75% economic life of a lease or the present value of the rents is 90%. FAS 13 provides "bright lines" or rather strict rules for testing the classification of a lease contract. For example, firm A reports the total value of the contract as 75 percent of the total economic life and must capitalize the lease contract. Meanwhile firm B with a contract covering only 74% of the economic life will show nothing on its balance sheet since it does not trigger the 75% rule. As instead, it shows only yearly rental expense in its income statement. In this example, firm A will show significantly more assets and liabilities on balance sheet than firm B. This is not logical and the arrangement puts the two companies to uneven position, as their assets are, de facto, almost identical in nature. (Troberg 2013). Thus, it is easy for managers to set up contracts that do not trigger capitalization rules. IAS 17 leaves more room for judgment. The decision must be based on facts and circumstances whereas FAS 13 relies solely on the facts. The differences between capital and operating leases are especially important in case of bankruptcy. Under operating lease, the lessor bears all the risks of bankruptcy and they may have to repossess the underlying assets in case of lessee entering into Chapter 11 protection. Instead, in capital lease contract, the lessee is the party treated as an owner of the asset. (Eisfeldt & Rampini 2009).

2.4.2 IAS 17 – Leases

IAS 17 Accounting for Leases was published in 1982 and revised in 1997 to adapt to changes in business needs. The 1997 version was called IAS 17 Leases and it overrode the prior IAS 17 Accounting for Leases. Finally, the IASB further revised IAS 17 in December 2003, with an effective date of 1. January 2005. IAS 17 prescribes the accounting policies and disclosure applicable to leases. (IASB 2007). The lease classification testing is almost identical to FAS 13. IAS 17 except fifth criterion suggesting that if the leased asset is of a unique nature, it is classified as a finance lease. Further, a lease can be finance lease, if any of the following additional criteria takes place: (IAS 17.11)

i. if the lessee can cancel the lease, the lessor's losses associated with the cancellation are borne by the lessee

ii. gains or losses from the fluctuation in the fair value of the residual accrue to the lessee (for example, in the form of a rent rebate equaling most of the sales proceeds at the end of the lease)

iii. the lessee has the ability to continue the lease for a secondary period at a rent that is substantially lower than market rent

Still, not all the criteria are always suitable for all conditions. Since they are not comprehensive, there is some room for consideration if the risks and rewards are clearly not transferred from the lessor to the lessee (IAS 17.12). The classification is made at the inception of the lease. Major changes in conditions affecting the classification should lead into reconsideration the lease contract. Still, the changes in the estimations such as discount rate or useful life of an asset do not necessarily result in a new lease agreement (IAS 17.13). Non-cancellable lease is defined in IAS 1.7.4 as a lease that is cancelable only:

i. upon the occurrence of some remote contingency;

ii. with the permission of the lessor;

iii. if the lessee enters into a new lease for the same or an equivalent asset with the same lessor; or

iv. upon payment by the lessee of such an additional amount that, at inception of the lease, continuation of the lease is reasonably certain.

IAS 17.4 defines lease as an agreement *whereby the lessor conveys to the lessee in return for a payment or series of payments the right to use an asset for an agreed period*. Further, *finance lease* is defined *as a lease that transfers substantially all the risks and rewards incidental to*

ownership of an asset. Title may or may not eventually be transferred. *Other than finance leases are classified as operating leases*. On the lessee's financial statement, lease payments under an operating lease shall be recognized as an expense on a straight-line basis over the lease term unless another systematic basis is more representative of the time pattern of the user's benefit. (IAS 17.4; IAS 17.33). IAS 17 is applied to all leases except for leases for exploring minerals, oil and natural gases and licensing agreements for items like video, recordings and plays (IAS 17.2). IAS 17 is focused on identifying when lease is economically similar to asset purchase. When lease is similar to purchasing underlying asset, it should be considered as a finance lease. All other leases are regarded as operating leases which are accounted similarly to service contracts using straight-line method for lease expenses. (IASB 2016).

Transfer of risk is important in determining the lease. In finance leases, all risks are effectively transferred to the lessee, whereas in operating leases the risks remains with the lessor. Risk refers to a possibility of losing money because of idle capacity or technological obsolescence. (IAS 17.7). Even though standard is very clear and consistent with the classification, problems arise when complex, real-life contracts are under revision. Sometimes it is difficult to see whether the risks and rewards have de facto transferred to the lessee or not. Deciding whether a contract is a finance lease or an operating lease is judged based on the substance instead of the form of the contract (IAS 17.10). Leases are classified at their inception. *The inception of the lease refers to the earlier of the date of lease agreement and the date of commitment by the parties to the principal provisions of the lease*. In addition, lease term is defined as the non-cancellable period for which the lessee signed a contract to lease the underlying asset. Another important concept in lease accounting is *minimum lease payments, which are the payments over the lease term that the lessee required to make for the lessor excluding items like taxes and cost of services.* (IAS 17.4).

Finance leases under IAS 17 are recognized as assets and liabilities in statement of financial position based on lower of fair value of the leased property and present value of minimum lease payments. These figures are estimated at the inception of the lease. (IAS 17.20). The initial direct costs related leasing activity are often incorporated with the amount to be recognized (IAS 17.24). The total amount of asset recognized in the balance sheet after the finance lease agreement is depreciated following IAS 16 Property, Plant and Equipment and IAS 38 Intangible Assets. The depreciation will take place based on the estimated useful life on an

asset. Finally, lessees shall disclose their *finance lease* positions applying the following instructions stated in IAS 17.31:

i. for each class of asset, the net carrying amount at the end of the reporting period
ii. a reconciliation between the total of future minimum lease payment at the end of the reporting period, and their present value.
iii. contingent rents recognized as an expense in the period.
iv. the total of future minimum sublease payments expected to be received under non-cancellable subleases at the end of the reporting period.
v. a general description of the lessee's leasing arrangements.

Accounting treatment of operating leases is simple. Lease payments are recognized as an expense on a straight-line basis over the economic life, unless the lessee can point out another depreciation method being more representative considering the nature of the lease. (IAS 17.33). *Economic life* is defined in IAS 17.4 *as a period over which the asset is expected to be economically usable* or *the number of production expected to be obtained from the asset*. Therefore, lessee does not recognize operating lease on its balance sheet, since the payments made are rent expenses showing up only in the income statement. Like in case of financial leases, lessees must disclose some information of their operating leases. Following the instructions presented in IAS 17.35, lessees should disclose:

i. future minimum lease payments under non-cancellable operating leases for the following periods: not later than year, later than one year and not later than five years and later than five years.
ii. future minimum payments expected to be received on subleases.
iii. lease and sublease payments recognized as an expense in the period, with separate amounts for minimum lease payments, contingent rents, and sublease payments.
iv. a general description of the lessee's significant leasing arrangements i.e. the nature of contingent rent payable, existence of renewal options and restrictions to dividends from the lease arrangement.

The disclosed cash flows are discounted using either implicit interest rate or the incremental borrowing rate of the lessee. IAS 17 defines implicit interest rate as the discount rate that causes aggregate present value of minimum lease payments at the inception of the lease. Incremental borrowing rate is the interest rate equal to the interest rate that the lessee would pay for the similar lease at the inception. Further IAS 17 defines contingent rent, which is a portion of the

lease payment that is not fixed at the inception. It varies based on variable such as revenue. For example, if a leased store location exceeds revenue of one million dollars, the rent might increase for two percent. (IAS 17.4) Contingent rents are common on many leases but not observable on the lease footnotes.

Lessor accounting is not in special interest of this study. Still it is useful to be aware how lessors treat finance and operating leases on their. Under finance lease, lessors recognize asset as receivables equal to an amount of the net investment in the lease. (IAS 17.36). Under operating leases, lessors shall present assets according to their nature (IAS 17.49). Lessors recognize lease income on straight-line basis, unless another systematic basis is more representative (17.50). Leasebacks contracts are common on many industries. In the IAS 17 framework, sale and leaseback transaction that results in finance lease, the excess of proceeds should be amortized over the lease term (IAS 17.59). If the transaction leads to operating lease, the transactions profit or loss should be recognized immediately if it is carried out at fair value. If the sale price is below fair value, the excess should be recognized immediately. Vice versa, if the price is above the fair value, the profit should be deferred and amortized over the period. (17.61).

In conclusion, IAS 17 is more developed than FAS 13 on many details. It is the natural building block for the lease reform. This reform and its end result, IFRS 16, is discussed in the next sections.

2.5 Lease Accounting Outlook

2.5.1 FASB and IASB joint project – Exposure Draft

After decades of debating on the accounting policies around leasing, a significant move toward new leasing standards environment took off when the Group of Four Plus One (G4+1), a group consisting of accounting standard setters from Australia, Canada, New Zealand, the United Kingdom and the United States plus the International Accounting Standards Committee published their special report in 1996. A New Approach for lease accounting suggested capitalizing all lease contracts. G4+1 further developed their proposed model by publishing implementation paper of the New Approach in 2000. Even though suggestions made by G4+1 are not directly applicable in the US GAAP or IFRS standards, their opinion counts a great deal. Their report concluded that lessees should recognize the fair value of all assets and liabilities in lease contracts using constructive capitalization method (ILW 1991) of operating leases. The report argued that the distinction between capital and operating leases is artificial

and unsatisfactory when assessing firms' performance and indebtedness. It suggested that the proposed lease accounting reform would enhance usefulness of financial statements by increasing comparability through unified lease treatment. (Mcgregor 1996; Nailor & Lennard 2000). By capitalizing all lease commitments, all shareholders would have the same perception of the financial risk involved in the business without the need to conduct time-consuming capitalization techniques. (Lipe 2001).

SEC together with significant investors stated their concerns over the current leasing standards in 2005, publicly claiming that there is a serious lack of transparency in the information flow related to lease accounting, as the lease obligations are not clearly visible. Critics argued that the users of financial statement are misguided since the current presentation techniques do not always provide a faithful presentation of leasing transactions. Responding to their concerns, the US regulators and the IASB kick-started a joint-project to improve accounting for leases. According to study conducted by the IASB, the long-term liabilities are significantly understated among the most active users of operating leases. They found that among these companies, long-term liabilities remain understated in Europe by 26% and in North America by 22%. In Latin America, the similar number is as much as 45%. In total, the off-balance sheet commitments disclosed in listed companies using IFRS or US GAAP were almost US$3 trillion in 2014. (IASB 2016). Clearly, these figures signal an urgent need to fix the flaws in the accounting for leases.

Bunea-Bontas (2013) argue that under current lease accounting rules, the biggest concern is the lack of comparability in financial positions and operating performance between companies that buy assets and those that lease them using operating leasing. Schneider et al. (2012) list two drivers for the proposed change in lease accounting. One is convergence of the accounting standards of the FASB and the IASB. Listed companies are functioning more and more globally, under many different standard regimes. Thus, it is on the interest of all stakeholders and regulators to create one universal set of rules. Converge projects have already been conducted for example in accounting rules for earnings, comprehensive income and pension obligations. The significant differences between US GAAP and IFRS will vanish over time. Second driver is steering standards toward theoretically more sound direction. As discussed earlier in this study, long-term operating lease payments should be recognized in the balance sheet instead of a lump sum in the footnotes. Thus, instead of guessing the correct amount of off-balance sheet liabilities, the operating leasing liabilities would be reported in the

body of the balance sheet. (Schneider et al. 2012). These drivers are in line with official objectives of the project.

Biondi et al. (2011) name the biggest issues where the current lease accounting standards come short such as bright line tests and knife-edged accounting, using special-purpose-entities that allow moving leases off-balance sheet, as well as a lack of symmetry in accounting for lessors and lessees. In addition, managers have currently too much flexibility and freedom to structure leases in way they do not get capitalized using renewal options and contingent payments. Knife-edged accounting refers to situation in which a small change in a transaction lead to opposite outcome. Either nothing is capitalized or 100 percent of the transaction is reported on the balance sheet. Consensus seems to be that there are many problems in the scope and sequence of current standards. Shough (2010) conducted a survey asking CPAs opinion on changes in accounting for leases. His study point out that the new approach is mostly favored among CPAs. They also favor a single approach for applying the right-of-use model. Overwhelming majority agrees that short-term leases should be excluded and that the lessee's obligation to pay rental should be measured as a present value of the lease payments discounted using incremental borrowing rate. Current accounting rules are too loose as they allow recording similar transactions in several different ways.

Addressing all these issues, the proposed changes in lease accounting seek to improve the quality of accounting. Further, the Boards state that the objective of the project is improving comparability of financial reporting by creating more transparency regarding leverage, the amount of assets used in operations and hidden risks under lease obligations. The proposal affect both the preparers and the users of financial statements. (IASB 2013). Since the proposal will have significant effect on many different professionals such as risk managers, auditors and analysts, their opinions need to be heard. (Barone et al. 2014). The IASB published a discussion paper of the new rules in 2009. Based on the commentary received, they published the first Exposure Draft in 2010 suggesting a right-of-use model for recognizing lease assets and liabilities. Artificial classification of finance and operating leases would be replaced with a right to use asset. Thus, all leases would be recognized at their inception as right to use the underlying asset with few exceptions like leases with minor financial significance or leases with 12 months or shorter maturity. Thus, lessees would apply single accounting model to all their leases regardless of the nature of the asset.

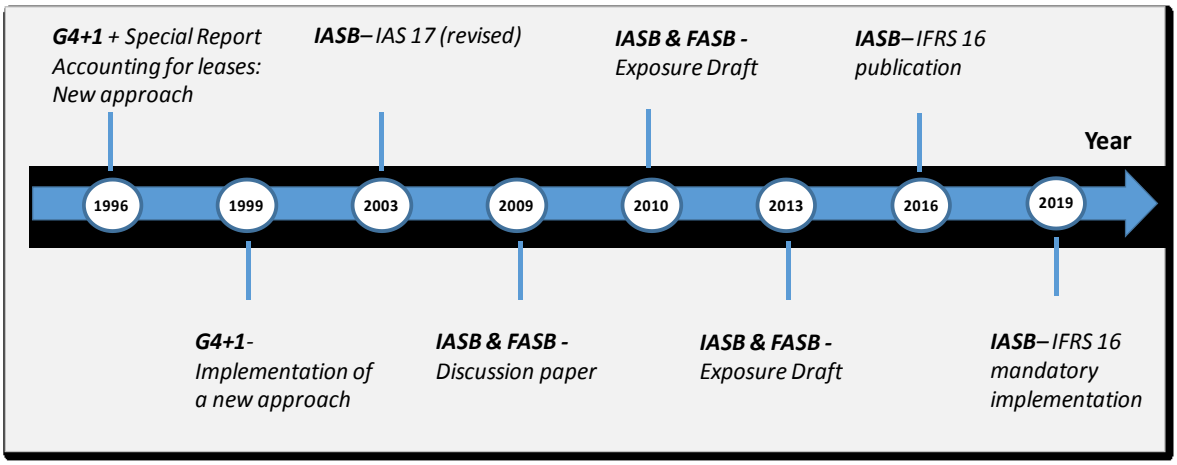

***Figure 5**. Development toward IFRS 16*

Figure 5 above illustrates a timeline of the contemporary lease accounting development. There are several steps and about two decades between the first G4+1 proposal and the implementation of the new IFRS 16. The process takes a long time. Understanding the substantial change in accounting, the IASB has taken very thorough approach and has proceeded cautiously during the project. The Boards have actively asked for feedback after every step. Interesting to see, the IASB actually changed the proposal significantly from the first ED to the second based on the feedback received. Thus, IFRS 16 is a result of consulting accounting firms, different industries, investors, analysts, regulators and many other users of financial statements. (IASB 2013)

Still, Biondi et al. (2011) claim that not all current loopholes are dealt with a proper manner in the first ED. The researchers demand more focus on closing off the loopholes regarding to definition of lease term, using SPEs, discounting as well as hiding leases as service contracts. The Boards published the second joint exposure draft in May 2013 in order to correct these shortcomings among many other concerns. (IASB 2013). Finally, after publishing the second ED, the Boards asked final comments before formatting the final IFRS 16 standard. Some academics and especially many firms in the industry have criticized the proposal.

Bunea-Bontas (2013) argue that the new standard will increase accountants' workload instead of decreasing it because companies need more data on their properties, taxes and net present values. Barone et al. (2014) argue that professionals in accounting are worried of the complexities regarding the new lease accounting standard. The cost for applying the new rules seem high, and the additional information mostly irrelevant. Additionally, many comment letters mentioned nonexistent benefits for small businesses as well as the lack of consistency with current the US GAAP. Feedback from professionals point out that estimated costs will be greater than benefits from the new lease standard regime (Barone et al. 2014). Lessees resist

the idea of mandatory recognizing of all leases in the balance sheet (Troberg 2013). Capitalizing operating leases will be largely front-loaded, as all the current operating leases are capitalized similarly to capital leases. Thus, the capitalized operating leases will tilt the lease portfolio toward the inception similarly to Figure 2 and the share of interest expense is relatively high few year after the capitalization. This occurs because straight-line method is applied to most of the capitalized leases. Especially industries using considerable amounts operating leasing have been against the new standard. (Jennings & Marques 2013). Still, the new standard is a step into the right direction. It is natural that, at least in the beginning, it will cause extra costs and hassle in the firms. IFRS 16 is a well-prepared standard, which will replace the inadequate current standard.

2.5.2 IFRS 16

The end product of the joint-project of the two accounting standards boards is the new leasing standard IFRS 16. The International Accounting Standards Board published IFRS 16 *Leases* on the first of January 2016. It comes into effect on January 2019 after postponements made to the original schedule. Companies can apply IFRS 16 voluntary before the effective date if they are also applying the new revenue recognition standard IFRS 15, which has an effective date on first of January 2018. IFRS 16 will significantly affect companies using operating leases as it brings all off-balance sheet leases on the balance sheet eliminating the distinction of operating and finance leases. IFRS 16 supersedes all the following accounting standards:

- IAS 17 Leases
- IFRIC 4 Determining whether an Arrangement contains a Lease,
- SIC-15 Operating Leases-Incentives
- SIC-27 Evaluating the substance of Transactions Involving the Legal Form of a Lease

Scope of the new standard will be similar to IAS 17. It will affect all leases with few exemptions to leases to explore minerals, biological assets and service concession arrangements and rights held by a lessee under licensing agreements. In addition, short-term and low value leases are not recognized similarly to other leases. Short-term refers to leases with a maturity under 12 months whereas low value items indicates that asset has a value of $5,000 or less (IASB 2016a; PwC 2016).

Creating one single on-balance sheet accounting model is the main ambition of the new standard. The IASB's objective is to ensure that lessees and lessor provide relevant information in a faithful manner representing the lease transactions accordingly (IFRS 16-IN1). Under

IFRS 16, lease is redefined as '*a contract that conveys to the customer ('lessee') the right to use an asset for a period of time in exchange for consideration*' (Italics added). Firms assess whether their lease contracts allow them to have right to control the use of an identified asset for a given period. IFRS 16 treats all leases similar to current finance lease accounting. Figure 6 below describes the impact of IFRS 16 on balance sheet and income statement. Right-to-use will appear on the balance sheet's asset side. Liabilities arise from the obligation to make lease payments. Lease expense in income statement comprises of the combination of depreciation and interest expense. Thus, firms' expense structure will change since rent expenses are replaced with the components of lease expense. The rate implicit in the lease should be used in discounting the future payments if available. (IASB 2016b).

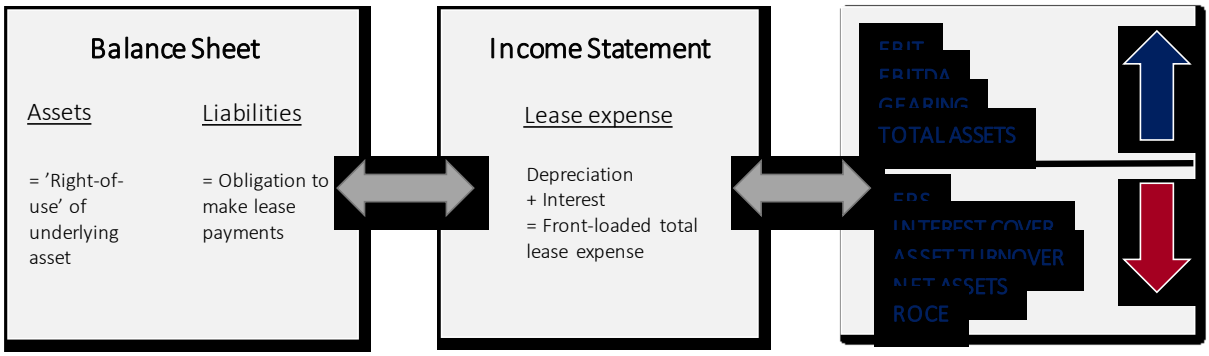

Figure 6. *IFRS 16 impact on balance sheet, income statement and financial metrics. (KPMG 2016)*

The logical consequence of capitalization is an increase in total assets and liabilities of a company. Additionally, this will influence many financial metrics like EBITDA and operating profit. These operating performance measures are expected to increase. Similarly, ratios for indebtness like gearing will increase since all the operating lease liabilities will be on balance sheet. The rightmost box in Figure 6 illustrates the impact of IFRS 16 on several financial metrics. In the beginning, earnings will likely decrease because the combination of interest rate and depreciation charge is front-loaded. As stated earlier in chapter 2, capitalization might also affect credit ratings and cost of debt. Worse gearing figures may trigger loan covenants and change behavior of stakeholders. Cash flow wise, IFRS 16 increases financing flows and decreases operating flows. (IASB 2016b; PwC 2016).

The distinction between leases and services is important in IFRS 16. Earlier, firms did not need to separate services from operating leases, as it did not change their accounting treatment. Now that firms have to capitalize operating leases, they must also separate the lease and the non-lease components. Leasing related services are non-leases. Currently many operating lease contracts include both these components. Under IFRS 16, only the lease

component is capitalized in lessee's balance sheet. For example, lease contract might include the actual lease component and a non-lease component, such as provision of maintenance service. Two components have to be separated, as services are priced differently. (IFRS 16.13-15; IASB 2016b).

The biggest reshaping will be on lessee accounting. The lessor accounting remains largely similar as IFRS 16 carries most of the lessor accounting requirements presented in IAS 17. They continue to classify leases similarly to IAS 17. (IASB 2016b). Thus, lessee and lessor accounting is lacking some consistency under IFRS 16. The biggest change in lessor accounting is that lessors should provide more information of their risk exposures in lease portfolios. IFRS 16 can be applied only to new lease contracts, or alternatively, retrospectively to all contracts as a 'big bang' on the date of application. The latter is more costly but will enhance the comparability of financial statements. (KPMG 2016). Firms can exclude variable payments linked to use of leased asset and most of the optional payments from their lease liabilities. The right of use recognized on balance sheet is reassessed for impairment. (IASB 2016b). Further, IFRS 16 will eliminate the many times problematic leaseback contracts as it is not anymore worthwhile to enter into, often complex, contracts since lessees cannot prevent presenting leases in their balance sheet. (KPMG 2016). Also, the guidance is stricter regarding subleases (IASB 2016b).

There are few studies on the potential impact of the new standard. Obviously, these studies will increase in the coming years, as IFRS 16 is fully functional. Jennings and Marques (2013) focus on the different depreciation methods in their study leasing study. They do not find evidence supporting straight-line method over present value depreciation. Many companies argue that straight-line method is very frontloaded method and does not correctly illustrate the asset's value for the company in different periods. According to comments, present value depreciation presents more reliably the cash flows related to leases (Jennings & Marques 2013). Thus, many firms find fault with the new model because it front-loads the lease expenses even though cash payments for rents are constant (KPMG 2016).

Despite very careful preparation process of IFRS 16, there remains couple of areas that are not completely converged. The FASB decided to stick with the dual accounting model introduced in their earlier publications together with the IASB. This will cause some differences in the conclusions of former off-balance sheet leases and reporting them. IASB did not proceed with the dual approach introduced in the second ED, as instead IFRS 16 uses single

lessee accounting model. (IASB 2016b). The FASB also reinstated the bright line tests and did not include exemptions for small leases in their standard renewal FASB 842. Another concern is the increased workload for the lessees, as they need much more data of their leases under IFRS 16. They need information of the services included in their lease contract, which they might or might not get from the lessor's side. In addition, it is likely that lessors need to fine-tune their business model due to the prospective changes. They might have to renegotiate and restructure some of their current lease contracts.

Companies should start preparing for the IFRS 16 taking place by analyzing their leases and recalculating their lease liabilities and separate non-lease components included in their contracts. By having a carefully planned implementation plan, firm cans smoothly transfer to the new rules. (PwC 2016). Some of the consequences from IFRS 16 are easy to forecast such as increase in assets and liability. However, there might be some unexpected consequences after the implementation in 2019. According to KPMG (2016), analysts will closely monitor three areas of focus after the implementation; effects on financial result, costs related to implementation and changes in behavior after the new standards takes place. The ongoing transition period will offer firms time to prepare. PwC (2016b) assessed the impact of IFRS 16 and found out that the median increase in entities' debt would be around 22 percent in their sample of 3,199 listed IFRS reporting firms. The median increase in EBITDA would be 13 percent. The airline industry, which is in focus of this study, would face around 47 percent increase in debt and 33 percent increase in EBITDA.

Figure 7. *IFRS 16 impact on business operations Source: EY (2016)* [3]

Finally, the benefits of the new standard seem to outweigh the negative effects. Mundstock (2012) argues that the new leasing standards improve the current tax laws in the US by providing transparent information of the income generated abroad. Cornaggia et al. (2012) find strong evidence supporting recognition of material long-term, non-cancellable lease obligations. As leases play a critical role in business operations on many industries. Figure 7 above summarizes the impact of IFRS 16 on different processes. Firms must put more resources in data collection and develop their current lease databases. It will put pressure to reporting in many firms as the data demanded is something they probably have not been collecting prior. As stated earlier, several financial metrics will be exposed to change. It will be interesting to see how the standard will affect firms' buy-or-lease decisions and whether some other financing structure gain favor.

[3] Available online at: http://www.ey.com/Publication/vwLUAssets/ey-leases-a-summary-of-ifrs-16-and-its-effects-may-2016/$FILE/ey-leases-a-summary-of-ifrs-16-and-its-effects-may-2016.pdf

3 INFORMATION ASYMMETRY RESEARCH

This chapter explains the concept of information asymmetry and its harmful implications such as adverse selection and agency costs. Moreover, this chapter discusses how to mitigate costs arising from uneven information and motivates using information asymmetry framework in a leasing-related study. Further, this chapter investigates the current financial reporting environment and disclosure policies, examining the optimal mix of mandatory and voluntary disclosures to reduce information asymmetries. Studying the impact of different forms of disclosures is useful in leasing context given the changing accounting treatment among IFRS 16. This chapter examines firms' financial reporting. It is a complex issue since demands of different stakeholders often collide. Finally, this chapter aims at expanding the theoretical leasing framework with the concept of information asymmetry. Understanding both these broader concepts is essential in conducting the empirical analysis later on. Finance literature has associated asymmetric information with stock price, return fluctuations as well as cost of debt (Trueman & Titman 1998; Chaney & Lewis 1995). This study further connects the theory to off-balance sheet leasing.

3.1 Information asymmetry

Accounting is an information science done by people. Accounting professionals use the framework and rulebook provided by regulators. It is not a hard science similarly to, for example, physics that obeys certain natural laws. In accounting, there are many different guidebooks to follow instead of a single universal practice. Many of these rules have lot of flexibility incorporated in their practical application. Standards evolve in tandem with business needs, but often with a delay alike to the leasing standard renewal project. No accounting standard is perfect. Thus, in a corporate environment, there are always ways to misrepresent information either intentionally or accidentally. Eventually, it is up to the managers and executives inside firms, how rigorously they comply with all the rules. Motivation to dress up financial statements would be for example gaining advantage over client, tax authority, investor and so forth. In business transactions, often one side has information advantage over the other. Information asymmetry exists in these kinds of situations. The two main types of information asymmetries found in academia are adverse selection and moral hazard. (Scott 2008). Even though accounting industry and academic literature have come up with tools and mechanisms to control information asymmetry such as efficient contract theory (Holmström 1979), the task of eliminating it seems cumbersome.

First important form of information asymmetry is called adverse selection. Adverse selection causes a situation in which one party has information advantage over another. A common example of an industry with large exposure to adverse selection is insurance business. Under adverse selection, the insurance taker has obviously much more knowledge of his or her own health and lifestyle compared to the insurance company. Thus, the insurance company needs to manage its risks and try to somehow price the information asymmetries. (Scott 2008). The question is how much premium it demands for doing business with a better-informed counterparty? The existence of information asymmetry leads to adverse selection, which further causes a barrier to entry into a contract to transfer the ownership rights (Balakrishnan & Koza 1993).

Adverse selection refers to situations in which buyer and seller do not have equal knowledge about the good on sale. Akerlof (1970) illustrates the concept with an example from a sales transaction of a used car. In his study, Akerlof describes used car sales transaction in his seminal paper *The market for "lemons"*. The buyer cannot be sure whether the car is good or a "lemon", a synonym for a bad quality product. The seller has incentive to overstate the condition of the car to get better price, whereas the buyer is naturally suspicious of its condition. Due to the existing asymmetries in information, the price differences between a brand-new car and a similar used car can be extreme. The prices need to adjust to the quality indifferences between lemons and good cars as well as to the amount of them both existing in the market. This in turn, leads to good cars being sold too cheap and vice versa. Akerlof describes the uncertainty prevailing in all markets intruding a theory of information asymmetry. All these mismatches in pricing and premiums for adverse selection are agency costs. (Akerlof 1970).

Stiglitz and Weiss (1981) studied adverse selection in banks. Adverse selection is present in lending business since the bank cannot be truly certain that its customer will pay back his or her loan. Hence, banks constantly face the problem of to whom they should lend and what should be the interest rate. Banks use credit rationing to prevent adverse selection. They need constantly adjust their portfolio by adjusting collateral demands and interest rates. According to Stiglitz and Weiss, there exist an optimal or an equilibrium in which the bank can maximize revenue. In this equilibrium, there are some market participants that can't get credit even by paying higher rate for the debt when meanwhile some group have excess collateral. Alike in the case of used cars, there are winners and losers under adverse selection conditions. Some market participant might get better than average car by paying only the average, or an

undeserved loan with better than average terms. Obviously asymmetric information works both ways, thus obvious challenge is pricing the adverse selection. (Stiglitz & Weiss 1981).

Moral hazard is another unwanted state arising from asymmetric information. Moral hazard causes agency costs because there is a conflict between the interests of a principal and an agent acting on behalf of the principal. One party has the power to observe fulfillment of actions in business transaction while the other cannot. Agency costs arising from the principal-agent problem related to separation of ownership and control. Earlier, the owner and manager might have been the same person. Separation of these roles has caused uneven distribution of information between owners and managers. Realigning the incentives of both sides is essential in efficient contracting. (Eisenhardt 1989). Thus, moral hazard occurs when one person takes more risks because someone else bears the cost of those risks leading to suboptimal total risk. This happens when the principal cannot monitor the agent efficiently. Incentivizing the agent to act honestly and monitor free riders exploiting the system is a considerable challenge. (Holmström 1979).

Moral hazard might be harmful and it is commonly blamed for causing the financial crisis in 2008 as individuals in banks were incentivized to lend as much as possible but unmotivated to do proper due diligence of the customer. Lev (1988) argues that systematic information asymmetries innate in the capital markets causes lower liquidity, high transaction and overall decreased profits from trade. Proper accounting regulation and mandating certain disclosures mitigate the unwanted consequences. Thus, regulation is not a zero-sum game. Instead, a proper accounting public policy can benefit all. Thus, SEC and the FASB should not focus solely on preventing frauds or enhance moralistic behavior as the suggested equity-orientation provides an economically sound model to create greater good. (Lev 1988).

In an accustomed corporate setting, the shareholders of the company act as a principal and the CEO as an agent. Under conditions of moral hazard, the CEO can drive the business with too low or high risk to boost his or her own career or wealth. To ensure aligned interests, there should be an organ monitoring the management's acts. Conventionally, this organ is the board of directors that represents the opinions of all external owners. Moreover, there are third-party institutions such as credit rating agencies and financial analysts providing information for the public. (Healy & Palupa 2001). Jensen and Meckling (1976) see principal and agents as utility maximizers. Thus, information asymmetry arises typically between managers and shareholders as they have unequal information about the firm. There are two aspects of agency

theory. Normative view suggest that the contract structure is relevant, and thus highlights creating an outcome that motivates the agent to maximize principal's welfare. Positive aspect trust the individuals' abilities to solve agency problems. The researchers find out that there is many times a quantifiable agency cost related to replacing manager. Many variables affect the size of agency costs such as nature of monitoring and supply for replacements. Jensen and Meckling integrates agency cost to larger theory of finance.

Eisenhardt (1989) concludes that agency problems arise when the desires and goals are misaligned between the principal and agent as well as when monitoring is difficult. If verifying the quality of principal's work is thorny, there is a greater chance that agent acts in his own interest. Another problem is risk related. In case the principal and the agent have different perceptions of risk, the risk level is not satisfactory for both. To realign the incentives, principal and agent should create a long-term relationship, in which states a certain outcome that should be reached. She suggests that self-interest is the key driver in organizational life. In the context of this study, information asymmetry describes the uneven amount of information between lessors and lessees or lenders and borrowers.

Information asymmetry has significant impact on many businesses and transactions. Asymmetric information is linked to various unwanted consequences such as earnings management, false firm valuation and unearned compensation based on performance. Trueman and Titman (1988) suggest that earnings management is strongly associated with the degree of information asymmetries in the firm. Managing earnings upwards may affect valuation of the firm and display it in too positive light. Earnings management arises endogenously if manager's compensation contract is tied directly to earnings. Compensation-maximizing managers tend to favor income boosting accounting policies. (Chaney & Lewis 1995). Balakrishnan and Koza (1993) argue that the existence of information asymmetries makes firm valuation difficult. They argue that if the acquirer and the target firm operate in different businesses, valuation is sometimes next to impossible, as the synergies are difficult to measure. They suggest creating joint ventures instead of acquiring a company to prevent possible harmful information asymmetries.

3.2 Financial reporting

Financial statement reporting is a language to communicate firm-specific information from inside to outside stakeholders. Beyer et al. (2010) describes information environment as an endogenously evolving whole, affected constantly by information asymmetries and agency

problems. The researchers name two vital roles of accounting information. The primary role is providing capital holders a tool to evaluate potential investments (valuation role). Secondly, accounting information provides an access to monitor investment retrospectively (stewardship role). Thus, accounting information environment should satisfy both the valuation role and the stewardship role in the most efficient way. There are three main decisions shaping the information environment in capital markets: manager's voluntary disclosure decisions, mandatory disclosure and reporting decisions by analysts. (Beyer et al. 2010). Accounting standards are in vital role regulating the financial reporting methods used by managers. Proper regulation potentially reduces the cost of processing financial statements as the managers and investors have a common language. (Healy & Palepu 2001).

Figure 8 below provides a framework in understanding the flow of information in capital market economy. Business firms provide information to household savings through accounting. Vice versa, household savings are unlocked with relevant information and the capital flows further back to businesses. To ensure this flow, intermediaries must be credible. Hence, regulators and auditors as information intermediaries have a vital role in assuring that firms comply with rules. In addition, information intermediaries act in essential task of refining the information from both sides. Thus, to ensure capital flows, the accounting information flows must be fluent. Financial intermediaries focus on maintaining and developing the institutional setting to ensure functional capital markets. There are numerous regulators governing corporate reporting in order to satisfy both sides of information flows. In the US, Securities and Exchange Commission is the most significant institution regulating disclosures. (Healy & Palepu 2001).

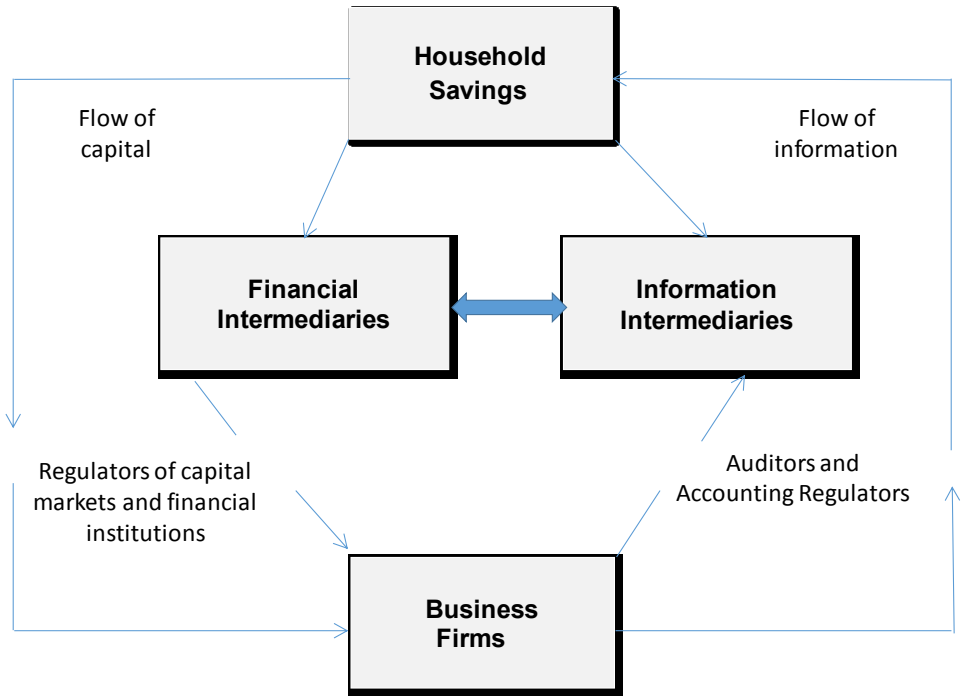

Figure 8. *Financial information flows in a capital market economy. Adopted from Healy (2001, Figure 1)*

The collapse of Enron and WorldCom in 2002 and a more recent Toshiba scandal in 2015 are all reminders of how accounting information can mislead investors and potentially lead to catastrophic consequences. Standard setters have major responsibility in finding the proper balance in regulating keeping in mind the governmental costs that firms must bear when complying with standards (Ross & Zimmermann 1976). The theory of financial reporting raises two significantly differing schools. Normative accounting is trying to find an objectively best approach to report. While positive accounting theory has its roots in agency costs and studies of efficient markets. Efficient market hypothesis by Fama (1970, 1991) states that if capital markets are fully efficient, and thus fully reflect all available information, analyzing financial statements would not be useful as all the information stated is instantly incorporated in stock prices. Hence, changing disclosure policies would not matter, as formal recognition and footnote disclosure are interpreted exactly similarly (Kothari 2001).

Ball and Brown (1968) connected accounting numbers to financial markets stating that financial statements have additional value. They examined the association between reported income numbers and stock price and found strong relation. Despite most of the information is already incorporated in the stock price, earnings announcements cause reaction in the stock price. Thus, they are useful because of their unique content implying that market does not know all the information before announcement. Moreover, they suggested that more timely interim report would serve investors better than annual reports. Watts and Zimmerman (1976) coined the term ‘Positive accounting’ continuing from the groundbreaking work of Ball and Brown.

Their main message is that standard setters and corporate managers are not isolated islands. Corporations do active lobbying to ensure favorable standards. Thus, firms manage earnings through propitious regulatory environment. Accounting standards affect for example taxes, compensation, bookkeeping costs as well as political costs. Thus, managers change their accounting policies to manage the firm's earnings, to achieve bonuses and manage debt. Firms also manage their earnings and investment decisions based on the expected government intervention. Their findings suggest that large firms act differently compared to small ones, as they face higher government intervention costs.

Positive accounting states that the accounting policy matters as the managers can influence firms' debt covenants, their compensation and earnings. Positive accounting tries to make predictions of managerial choices. The theory suggests that financial contracts often neglect the information stated in the footnotes. It does not agree that markets are efficient in grasping all financial information. Thus, sometimes decisions are based solely on formal recognitions in the financial statements as the contracting parties lack the skills or motivation to dig into the voluntary disclosures and footnotes. (Watts & Zimmerman 1990). Studies show that positive accounting theory may give a more comprehensive explanation of financial reporting theory. In his impressive review paper, Kothari (2001) concludes that regulated financial reports provide new and relevant information to investors and users of financial statements instead of just reporting what the market already knows.

Financial reporting and disclosures are the most efficient means in communicating performance and governance of the firm to outside stakeholders. Corporate disclosure is critical for a well-functioning capital market. Firms can disclose information using official, regulated channels such as financial statements, financial reports, footnotes, management discussions and other publications. Alternatively, they can voluntary communicate by providing forecasts and analysis from the management. Apart from mandatory and voluntary disclosure, firms can use financial press or analyst to communicate their information to the public. (Healy & Palepu 2001). The regulators and standard setters constantly recalibrate what is mandatory information to disclose. Academic literature has found evidence that accounting information has material effect on security prices suggesting that regulated financial statements provide valuable new information to capital markets. (Ball & Brown 1968; Kothari 2001). Still, Healy and Palepu (2001) argue that regulated financial statements might not necessary be superior to unregulated information simply because we do not have a comprehensive comparison of regulated information to the latter.

Information asymmetry is always present in financial reporting. According to Healy and Palepu (2001), it is in fact, the most significant reason for financial reporting as the demand for disclosure arises from information asymmetry and agency conflicts. Managers and outside investors have different needs from reporting. Investors demand reliable and relevant information whereas the firm needs to decide how much it uses resources to serve the investors by providing voluntary information. (Scott 2008). Often these two demands clash with each other as managers might be reluctant to disclose all the necessary information demanded by investors. Biddle and Hilary (2009) suggest that financial reporting is directly related to investment efficiency. The researchers argue that higher reporting quality reduces symptoms of information asymmetry such as adverse selection and moral hazard.

A fundamental problem in accounting is setting up standards serving both the investor-side demanding relevant information, and owners evaluating manager performance. Producing information is costly but using it is free of charge. (Scott 2008). Beaver (1981) and Beaver et al. (1999) argue that accounting information is virtually a public good, as all the investors have access to it commonly without payment. He adds that there exists a problem of free riding leading to a situation, in which companies are unwilling to produce the optimal amount of information. Accounting research suggest that accounting standards are value relevant meaning that new standards have impact on earnings and therefore to stock price. Hence, regulators and standard setters can influence markets with their decisions. (Healy & Palepu 2001). Standard setters have constantly revised their existing standards and created new ones based on the needs of the users of financial statements. In 1991, the AICPA addressed concerns regarding the relevance and usefulness of financial reporting. This is when they recommended firms to disclose much more information on nonfinancial figures, segment reports and forward-looking information. These are called voluntary disclosures, which provide the investor with more in-depth analysis of the company's future. (Healy & Palepu 1999).

3.3 The role of disclosure in financial reporting

A considerable challenge in all economies is allocating capital from savings to investments. Disclosure has major role in creating a trust-based economy, in which capital flows freely. Disclosure of information has a vital role in matching household savings and entrepreneurs seeking capital. To overcome problems arising from information asymmetries between savers and entrepreneurs, there must exist a solid financial reporting environment with transparent disclosure rules. Incentivizing managers to disclosure as much as possible attracts savers to

invest their money more willingly as they can trust the information disclosed. Efficient contracting, regulation and monitoring are all means to reduce asymmetric information. Moreover, compensation agreements and debt contracts that requiring disclosing relevant information for both sides solve agency problems between savers and entrepreneurs. (Healy & Palepu 2001).

Disclosures in financial statements are either mandatory or voluntary. Full disclosure refers to SEC's requirement that publicly traded companies disclose all relevant information of their ongoing business operations. Full disclosure is what financial statement users want and expect to get. Then again, firms are not keen on disclosing extra information without a proper incentive. Producing information costs resources. Moreover, firms are unwilling to disclose their competitive advantages or other unique factors. Disclosure studies suggest that managers have superior information to external investors of the firm's future performance (Healy & Palepu 1993, 1995). Assuming, that not all relevant information is published under mandatory disclosures, managers have the power to communicate that information through voluntary disclosures. Alternatively, they can withhold the information for their own purposes like managing the reported performance. (Healy & Palepu 2001).

Assuming markets are imperfect, and thus financial reporting policies matter, the question remains; how to present financial information optimally? Recognition versus disclosure is one the most active conversation in academic accounting discussion. Formal recognition in financial statements means presenting information in the body of official financial statements including the information as an asset or liability in the balance sheet and revenue in income statement. Alternative method is footnote disclosure, which simply means disclosing information in the footnotes of the financial statement similarly to Delta's lease payments earlier in Tables 1 and 2. (ILW 1993). Accounting policymakers routinely evaluate whether a certain transaction requires formal recognition in the financial statements or is disclosure in the footnotes of financial statements adequate (ILW 1991).

Majority of financial statements users seem to prefer formal recognition instead of footnote disclosure. McClean (2006) finds evidence from New Zealand that market participants do not use the information given in the footnotes as efficiently compared to direct disclosure. Contrary, Sakai (2010) does not find any material difference between recognizing leases in balance sheet and footnote disclosure from the market perspective. Voluntary disclosures are associated with lower cost of capital as investors demand premium for bearing information risk. Voluntary disclosures can mitigate this risk. (Healy & Palepu 2001). Disclosure policy

has potentially material impact on financial figures. Voluntary disclosure potentially improves stock liquidity by reducing information asymmetry (Kim & Verrechia 1994). Diamond and Verrechia (1991) argue that firms disclosing information frequently are reliable and the transactions with their stock occur with correct price.

Healy and Palepu (1999) state that, in their sample consisting of 97 firms, expanding voluntary disclosures is accompanied with increase in stock returns, institutional ownership, analyst following and stock liquidity. The researchers measured the quality of voluntary disclosures by rating the sample firms' disclosures. Their result is in line with other studies showing that expanded voluntary disclosure can have material benefits for a firm. These results support the argument that comprehensive financial reporting is beneficial for both the investors and the firm itself. Market efficiency perspective, sees regulation hindering firms' businesses, arguing that market finds the optimal regulation among themselves without any authority interrupting. Then again, regulation is mandatory to create well-functioning capital markets. Good regulation can overcome market imperfections in disclosure through mandatory disclosure therefore preventing market failures. Finding optimal amount of regulation is balancing between market efficiency and accounting scandals leading to market disturbances. There is not much empirical research studying whether regulation can correct market failures so there does not exist single truth. (Healy & Palepu 1999, 2001).

Many studies find relationship with corporate disclosure and cost of capital. (Botosan 1997; Botosan & Plumlee 2002; Sengupta 1998). Botosan (1997) finds evidence supporting her hypothesis that disclosure level is associated with lower cost of equity capital. For firms followed by a large group of analyst, such association does not exist. Sengupta (1998) finds negative association between firm's overall disclosure quality and firm's incremental borrowing rate measured with i) yield of maturity and ii) effective interest cost of the issuer. The results suggest that highly rated firms based on quality of disclosure, are perceived to have lower risk of default and thus have lower cost of debt. Furthermore, Sengupta argue that especially under uncertain market conditions, analyst put faith in firm's disclosures. Hence, it seems that disclosures not only have impact on cost of equity but also on the cost of debt.

There are three common types of disclosures (annual report, quarterly report and other reports, and investor relations. Botosan and Plumplee (2002) studied the relationship between total disclosures and cost of equity capital by inspecting each of these three disclosures separately. Cost of equity capital decreases as the level of annual disclosure increases. Contrary, the relation between the level of quarterly and other reports and cost of equity is

reversed. Investor relations does not seem to have association to costs of capital. Hence, the total disclosure is not largely associated with cost of equity capital, or if anything, has a negative correlation. Quite surprisingly, the evidence supports the claim from managers that greater disclosure of timely information increases cost of equity capital as the volatility of stock return increases. (Botosan & Plumlee 2002). In her most recent paper, Botosan (2006) confirms the argument that managers' financial reporting choices impact cost of capital. Despite somewhat mixed evidence, she finds a large body of evidence signaling that greater disclosure reduces cost of capital. Cost of equity is not always observable as it is measured in relation to the future. Also, it remains unsure whether information asymmetry can be mitigated by public disclosures. Thus, Botosan argues that private and public market participants may sometimes act as complements instead of conflicting each other.

Baek et al. (2009) argue that as agency problems arise partially from information asymmetry, the problem is solvable by increasing voluntary disclosures. In addition, corporate governance involves various other activities that can potentially reduce agency costs. By increasing managerial ownership, firms tend to make more discretionary disclosures, and thus inform their stakeholders better. Corporate disclosure policy is closely tied to firm's governance and organization structure. Thus, corporate governance can enhance managerial ownership leading to increase in level of voluntary disclosures. Thus, quality of disclosure matters in financial reporting. Firms can proactively steer the disclosures with their own governance policies. Lang and Lundholm (1996) display the relationship between disclosures and analysts' forecast accuracy. Many times, the difference in forecasts derive from informativeness of disclosures rather than interpreting them differently. In addition, firms with greater amount of forthcoming disclosures tend to have more extensive analyst following and better consensus among earnings forecasts. Thus, the accuracy increases with disclosures. Especially investor relations is vital form of disclosure for analysts. Disclosures on the area of investor relations mitigate information asymmetries between investors and firms leading to larger pool of potential investors. Evidence displayed by Lang and Lund support full disclosure policy.

Disclosure policy has also impact on market liquidity as uninformed investors demand premium for adverse selection, thus their demand for price protection is represented in form of bid-ask spread. In liquid market, the difference between bid price and offer price should be small. Vice versa, under conditions of information asymmetry the gap is big as there is significant amount of uncertainty around the correct price. There exists a negative association

between disclosure level and bid-ask spread. Disclosing information potentially reduces the adverse selection component of the spread. (Welker 1995).

Bhattacharya and Spiegel (1995) argue that information asymmetry promotes the unwillingness to trade. This unwillingness leads to higher cost of capital arising from investors urge to "price protect" against potential losses from trading with better-informed market participants. Furthermore, they argue that equilibrium prices do no aggregate information effectively suggesting that markets are not perfectly efficient. In this kind of environment, disclosure policy is an efficient tool informing inside information to outsiders. Disclosure policies are closely related to lease accounting as the current standards allow footnote disclosure for majority of leases, but IFRS 16 requires formal recognition for all leases. The next chapter combines the theory of leasing and information asymmetry creating a unified hypothesis. Measuring information asymmetry will be discussed later in the empirical part of the study.

4 HYPOTHESIS

This chapter presents the tested hypothesis and describes its building process. The hypothesis is based on prior research investigating the determinants of using operating leasing as well as to literature examining information asymmetry. Thus, the empirical models are derived from the existing literature using subjective reasoning and by combining prior studies. The potential effect of information asymmetry on leasing is assessed by examining the relationship between proxy variables for asymmetric information and proxies measuring propensity to lease. Thus, the foremost interesting research question in this study is as follows:

- Is information asymmetry associated with firms' propensity to lease assets?

As stated earlier, the prior accounting literature agrees extensively on the problematic nature of off-balance sheet assets and liabilities caused by operating leases reported only on the footnotes of financial statements. Off-balance sheet operating leases have material impact on financial measurements regarding performance, return and risk. Thus, financial statements lack transparency and comparability between high lessees and low lessees. (ILW 1991, 1993; Beattie et al. 1998; Goodacre 2003; Durocher 2008). Constructive capitalization method, examined in detail in chapter 2.2.1 provides a model to capitalize off-balance operating leasing cash flows. Constructive capitalization technique is used in this study to estimate the amount of unrecorded leases. It is commonly accepted as theoretically soundest method, and thus superior to a simple factor method.

Empirical evidence presented by Beatty et al. (2010) reports a relationship between lease propensity and accounting quality. Eisfeldt and Rampini (2009) present the association between financial constraints and lease propensity. This study extends their framework by examining the connection between information asymmetry and leasing. Prior research suggests that firms facing high level of information asymmetry only have limited access to capital markets. Thus, these firms are more prone to rely on lease financing instead of using secured borrowing. Lease companies are more efficient in redeploying and managing the assets compared to banks. Their superior control rights allow providing capital to firms with financial constraints. (Beatty et al. 2010; Eisfeldt & Rampini 2009).

In line with finance theory, Yan (2002) concludes that leases and debt are substitutes rather than complements. Substitutability is higher among companies with information asymmetries in their contracting. Thus, firms often choose either lease or secured debt. Lease-or-buy decisions are studied extensively but mostly from traditional economic point of view.

Economic rationales to lease are for example, marginal tax rate, tax shield, growth options and firm size (Cornaggia et al. 2012). Information asymmetry is not yet studied in relation to lease financing. Thus, the regression analysis estimates the explanatory power of information asymmetry to off-balance sheet lease liabilities. Lease propensity is expected to increase in tandem with information asymmetry similarly to studies on capital constrains and tendency to lease (Eifeldt & Rampini 2009; Beatty et al. 2010). Firms having high amount of information asymmetry do not get external capital with reasonable interest. Leasing lowers the barrier to entry into a contract as the lessors can easily repossess the asset and find a new lessee. Leasing companies generally tolerate more information asymmetries within their customer base compared to traditional banks. (Gavazza 2010). Based on these findings, I expect that information asymmetry has incremental explanatory power explaining lease-or-buy decisions. Thus, lease propensity should increase in proxies for information asymmetry. The sole hypothesis in this study is therefore as follows:

H1. Propensity to lease-versus-buy assets increases in information asymmetry

Alternatively, high lease propensity might signal firm's general interest in off-balance sheet finance, which is difficult to isolate. In the coming chapters, I discuss the research design, data and the result of the empirical tests. (Beatty et al. 2010). In addition to the main hypothesis, this study provides an outlook of general trends in lease propensity through the sample period among airline industry to gain an idea of the development of lease business.

5 METHODOLOGY AND DATA

This chapter describes the data and methodology used in this study. Moreover, it portrays the construction process of variables applied in the empirical models as well as the research design. Finally, this chapter discusses sample selection and control variables used. The study is conducted as a quantitative regression analysis. Research variables used in this study consist of the dependent variable, the independent and control variables. There are two basic models, which are similar except the sample sizes, and proxies used vary between the models.

5.1 Variables

Measuring independent lease variable

The empirical analysis requires information on the amounts of constructive capitalized leases. The focus of this study is solely on balance sheet variables as they are more material than income statement effects. For the purposes of this study, the balance sheet variables give accurate enough picture of the off-balance sheet leases. In addition, estimating balance sheet effects is easier. (Jennings & Marques 2013). Obtaining the unrecorded lease amount requires using the ILW (1991) approach explained prior in chapter 2. The estimated liability is calculated from the footnote disclosures of future minimum rental payments using nine percent discount rate. The proper discount rate should be firm's borrowing rate. Since the actual rate is not available in Compustat, I use an average of the prior studies. ILW (1991) use 10 percent, Goodacre (2003) 8.5 percent and Jennings & Marques (2013) applies 7 percent discount rate. Hence, the average of the prior studies equals 8.5 percent. For the sake of conservatism, I round the rate to 9 percent. To discount the lump sum, information of life of the lease is needed. Similarly to Jennings and Marques (2013) expected life of leased assets (N) is measured for each observation using the following formula. It is the number of years that firm discloses future lease payments.

$$Leased\ asset\ life\ (N) = 5 + \frac{payments\ beyond\ five\ years}{the\ fifth\ year\ payment}$$

Assuming that the lump sum is equally paid during the remaining life, the lump sum is then discounted using annuity of the remaining lease life less the present value of a 5-year annuity at the similar 9 percent discount rate. The sum of discounted cash flows for five years and the lump sum represent the unrecorded operating lease liability. Operating lease cash flows are always minimum. Many times, the actual rents paid are bigger because of contingent rental

payments. Thus, the model has innate conservatism built in it when estimating the unrecognized leases (ILW 1991). Next step is estimating the corresponding amount of unrecorded assets. As mentioned in chapter 2, unrecognized leased assets are always less than liabilities because the lease obligation is reduced in accordance with effective interest rate method whereas the lease is depreciated on a straight-line basis. Therefore, leased assets decline directly after inception following the depreciation schedule. Contrary, leased liabilities include interest payments, which are bigger at the inception when the principal lease payment is bigger as well. To estimate unrecorded assets, it is necessary to calculate assets to lease liabilities ratio (ALR). The formula below is used to calculate the ratio for every observation. (ILW 1991, 1997; Jennings & Marques 2013).

$$\boldsymbol{ALR} = \frac{\frac{1-(1+r)^{-N}}{r}\left(\frac{Rem}{N}\right)}{\frac{1-(1+r)^{-Rem}}{r}}$$

N	*= number of year the future payments are expected. Equals the leased asset life measured above*
r	*= firm-specific average borrowing rate, here 9%*
REM	*= N/2*

The numerator represents the relative asset value. It is a one-dollar annuity for the original life of the lease multiplied by the ratio of remaining life to the original life. The denominator in the ALR formula is the relative liability value, which is equal to the present value of a one-dollar annuity for the years remaining life of the lease. (Jennings & Marques 2013). The appropriate interest rate should be the historical marginal secured borrowing rate (ILW 1991). Since the sample data in used in this study does not indicate the actual borrowing rate, 9 percent is used consistently. The leased asset is thus obtained by multiplying the estimated lease liability with the ALR for every observation. The average ALR in the sample is 81.5 percent. It is not possible to calculate the ALR for observations with zero lease payments after the fifth year, thus their ALR is assumed 70 percent in line with ILW (1991). Thus, the first dependent variable measuring the propensity to lease is calculated as follows:

$$Lease(1)_{ti} = \frac{Capitalized\ leased\ assets}{(Capitalized\ leased\ assets + PPE)}$$

This lease ratio describes firm's eagerness to use lease financing, as it is the relative amount of capitalized leased assets from the fixed assets of the firm. The amount of property, plant and equipment (PPE) is obtained directly from Compustat (#8). Additionally, I use another proxy for lease propensity to capture the willingness to lease comprehensively mitigating the risk of using a bad proxy. The second proxy for relative leasing intensity is the

amount of operating lease payments that year to depreciation and amortization plus the similar lease payments each year similarly to what Jennings and Marques (2013) uses. Thus, it captures the tendency to use lease financing instead of other sources financing by examining the minimum rental commitments for the next year (MRC1) to the amount of depreciation and amortization (DP). These values are obtained directly from Compustat for all observations (#96 & #133). Hence, the second proxy for lease propensity is as follows:

$$Lease(2)_{ti} = \frac{lag(MRC1)}{(lag(MRC1) + DP)}$$

Both lease proxies get a value between zero and one. Value of one indicates maximum amount of lease propensity whereas a value of zero implies a nonexistent lease activity in the firm. Among airlines the average are expected to be higher than many other industries. The proxy values are measured for each observation and used later in the regression models.

Estimating information asymmetry

The explanatory variable of interest in this study is information asymmetry. Identifying information asymmetries directly is impossible because it is private information, and thus not visible in public records. It not reported in the financial statements. Nonetheless, there is a bunch of available proxies for information asymmetry. (Karlan & Zinman 2009). Prior studies have used for example analyst cover (Brennan & Subrahmanyam 1995; Bushman et al. 2005), earnings management (Trueman & Titman 1988), bid-ask spread (Coller & Yohn 1997) as well as R&D expenses (Aboody & Lev 2000) as measures for information asymmetry. There is a whole host of other variables that could be used to illustrate asymmetric information. Choosing a proper proxy is somewhat subjective decision.

In this study, the amount of information asymmetry is measured using two different proxies. First proxy is firm size. Small firms are associated with larger information asymmetry. Chari et al. (1988) report the association between seasonal returns and firm size. Returns for small firms are much greater around earnings announcements compared to large firms. This implies that there is more information asymmetry between managers and investors. Small firms have also worse accounting quality, larger spread in stock price as well as more financial constraints. I expect small firms having larger information asymmetries making firm size a

logical proxy. (Cornaggia et al. 2012). There is evidence that small firms use relatively more operating leases in comparison to large ones (Eisfeldt & Rampini 2009). Thus, this study examines if this is true in the air transportation industry as well implying that there should be association between firm size and the relative amount of leasing. To measure the values of firm size proxy, I use natural logarithm of net sales of all the observations and then rank them accordingly in the sample similarly to Beatty et al. (2010).

Another common measure for information asymmetry is Probability of Informed Trade (PIN), which is used in the second model. The PIN model estimates the rate of informed trades from all trades. PIN model is derived from market microstructure model (Easley & O'Hara 1992). It has gained lot of attention in recent research. The microstructure model examines market information mechanism arguing that public information is incorporated in stock price while PIN arises from abnormal trade flow (excess buying or selling), and thus represents private information. (Vega 2006). Easley and O'Hara (2004) suggest that stocks with more information asymmetries include more risk, and thus have higher expected return. Informed trade occurs when investor has private information. Thus, PIN measures the probability of trade order originating from a market participant holding private information. Uninformed traders require premium for trading stock with a high PIN. It is a firm-specific ratio. Value of zero signals nonexistent information asymmetry implying that all traders have even knowledge. PIN is calculated simply from the number of buyer-initiated and seller-initiated trades. However, the classification is difficult in larger datasets as the initiator is rarely disclosed. (Hwang et al. 2013).

Duarte & Young (2009) suggest using PIN adjusted with liquidity effect. They decompose the original PIN measure to information asymmetry component (adjPIN) and liquidity component (PSOS). Adjusted PIN is considered as a more accurate proxy addressing information asymmetry. Evidence shows that it is significantly related to expected stock returns and succeeds in capturing asymmetric information in a consistent manner. (Hwang et al. 2013). It is defined similarly to PIN. Adjusted PIN is the ratio of informed orders to the total order flow. (Duarte & Young 2009). Thus, for the purposes of this study, it is justified to use adjusted PIN, as the liquidity component is not in the scope of this study. The weakness of using adjusted PIN is that the ratio is not available for all years and firms.

Table 5. *Summary of the variables.*

Variable	Description	Expected sign
Lease	Lease propensity	Dependent variable
adjPIN	Adjusted probability of informed trade	+
Size	Decile ranking of natural logarithm of net sales.	-
MTB	Market value / book value	-
Historical Profitability	Retained earnings / Equity	-
Loss	Dummy variable for reported loss	+
Nodiv	Dummy variable for dividends	+

Table 5 presents all the variables used in the regression models. Firm size and adjusted PIN are independent research variables. They are used in separate models representing information asymmetry. In addition to the research variables, there are two control variables included. The first control variable, *Market-to-book ratio (MTB)*, measures the ratio of market capitalization and book value of a firm. Lease financing should have negative relationship with MTB as high growth firms should have less fixed claims such as leases because they have more growth options. High growth firms have high market to book ratio, hence I expect a minus sign for the variable. (Cornaggia et al. 2012). Second control variable, *Historical profitability,* captures the financial stability of the firm. It is measured by dividing retained earnings by the firm's equity. Higher historical profitability implies a stable business with less financial constraints. Thus, I expect that the historical profitability figure is negatively correlated with the amount of leasing.

In addition to control variables, there are two dummy variables used in both models. First indicator variable *Loss* is used to indicate whether the firm reports a negative result for the financial year. Loss gets a value of 1 if the firm's net income (Compustat #172) is less than zero and otherwise a value of zero. Firms reporting losses are assumed to be more financially constrained and thus using more leasing. The second dummy, *Nodiv,* reports whether the firm pays dividends. It gets a value of one if the firm does not pay dividend on the given year and otherwise a value of zero. Not paying dividends indicates financial constraints. Non-dividend paying firms should have more problems borrowing from the market and should use more lease financing. Therefore, both dummies should have a plus sign in relation to lease propensity.

5.2 Sample selection

Examining the relationship between information asymmetry and lease propensity requires data for example on minimum lease payments, net sales and PPE as well as information used in other variables. The sample data in the empirical study is obtained from Compustat database in Wharton Research Data Services. The initial sample used in the first model comprises of 774 firm-year observations. The data is from air transportation industry including Standard Industrial Classification (SIC) code range of 4500-4599. All observations contain information for all the variables relevant in the first model. Firms with less than $1 million in total assets are removed from the sample to get more reliable results. The initial sample includes 76 listed companies in the industry of focus. The observations are gathered between years 1995 and 2016. In addition, two control variables are added to both model to see if they improve the model. Observations for which information on any variable was not available were eliminated from the sample.

In the second model, which will be presented shortly, I use a subsample from the initial sample because the second proxy for information asymmetry, adjusted PIN, is not available for all firms. This subsample consists of 108 firm-year Observations and 16 airlines. Thus, the sample size diminishes significantly which obviously must be assessed when interpreting the statistical significance of findings. Values for adjusted probability of informed trade (adjPIN) are obtained from webpage containing PINs data[4]. The data is calculated using a model by Venter and De Jongh (Venter & De Jongh 2006). The adjusted PINs are available for years 1995-2004, which eliminates loads of observations from the initial sample.

Air transportation industry is logical choice for the purposes of this study as large proportion of aircrafts are leased. Focusing on a single industry reduces concerns of industry-specific results driven by correlations between leasing, financing and accounting (Beatty et al. 2010). More than half of all commercial aircrafts are leased, from which majority are under operating lease and thus not formally recognized. Aircraft leases totaled to 11 % of all new leases in 2004 while only computer equipment were leased in larger amounts. Aircrafts are extremely liquid since all airlines use similar aircraft types. There is an active secondary market for aircrafts. The liquidity allows lessors to quickly find new lessee if needed. Unlike in many other industries, lessors can be very confident that they can resell or lease aircraft in case of

[4] available online at: http://www.owlnet.rice.edu/~jd10/publications.html

payment issues. Liquid market shortens operating lease times, and on the other hand, lengthen capital leases compared to cross-industrial averages. (Gavazza 2010). Airlines are in business where demand for planes heavily fluctuates. The mix of right amount of right type of planes vary significantly year-to-year. Therefore, airlines prefer to lease at least a proportion of their fleet with a short-term, cancelable basis. (Brealey et al. 2012). Table 6 describes the proportion of different SIC codes in the initial sample. Majority of the observations are airlines focusing on scheduled flights.

Table 6. *Description of SIC codes in the sample N = 774*

Industry	SIC Code	%
Air Transportation, Scheduled	4512	67,7 %
Air Courier Services	4513	11,0 %
Air Transportation, Nonscheduled	4522	11,5 %
Airports and Airport Terminal Services	4581	9,8 %

Figure 9 displays the distribution of observations to different years. The highest amounts of observations are from 2004 and 2006 with 46 observations. The smallest amount of observations in the sample is from 1995 with 15. Compustat database includes disclosures of lease payments after the fifth only since 1995, hence it sets the lower boundary of years in the sample.

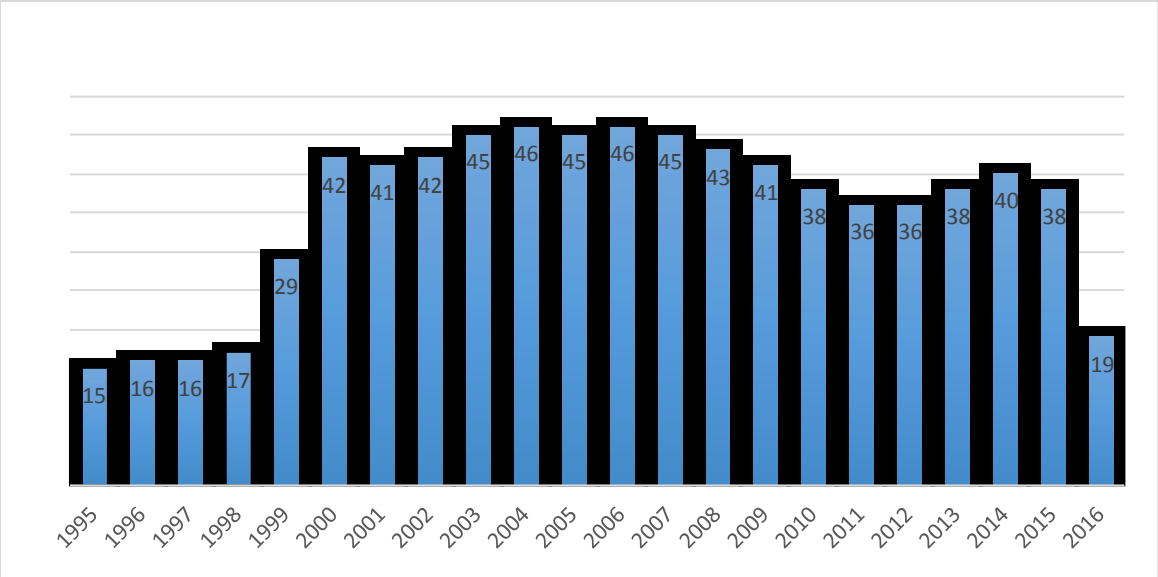

Figure 9. *Distribution of Yearly observations N = 774*

5.3 Research design

The research method in the empirical analysis is ordinary least squares regression (OLS). I conduct an OLS regression to inspect the relationship between information asymmetry and operating leases. Multiple regression model allows examining several independent variables. To test the hypothesis, the following two models are constructed. If information asymmetry is related to leasing, then I expect the proxy variables moving accordingly. Thus, higher information asymmetry should lead into higher lease propensity. I run both models using two different proxies for lease propensity presented earlier. The two models are identical except for the proxy used to measure information asymmetry.

The first model (1), in which information asymmetry is measured using firm size as a proxy tests the explanatory power of three independent variables. Moreover, there are two dummies included in the model. I expect that firm size has incremental explanatory power, has a negative coefficient as noted in the variables table and is statistically significant.
Model (1) is as follows:

$$Lease = \beta_0 + \beta_1 * Size + \beta_2 * MTB + \beta_3 * Historical\ Profitability + \beta_4 * Nodiv + \beta_5 * Loss + \varepsilon$$

As explained in the variables section, there are many available proxies for information asymmetry. Thus, I use two different proxies to ensure that information asymmetry is captured from the sample. Model (2) has the similar control variables and dummies than the first model. It measures information asymmetry using adjusted PIN introduced in variables section replacing the firm size proxy in Model (1). The sample is much smaller because the adjusted PIN is not available for all firms. Thus, I expect statistically insignificant negative coefficient for adjPIN variable.
Model (2) is as follows:

$$Lease = \beta_0 + \beta_1 * adjPIN + \beta_2 * MTB + \beta_3 * Historical\ Profitability + \beta_4 * Nodiv + \beta_5 * Loss + \varepsilon$$

I regress both models using two different proxies for lease propensity. The first proxy for lease propensity Lease (1) is the capitalized operating lease assets whereas Lease (2) is estimated dividing the first-year minimum lease payments by the amount of depreciation and amortization. Both proxies should give similar perception of a firm's eagerness to use operating lease contracts. Please see the variables section for detailed explanation of the variables used in the empirical research.

6 EMPIRICAL RESULTS

This chapter presents the result of the empirical part of the study describing first the general leasing trends in air transportation industry based on sample evidence and secondly providing descriptive statistics, variable correlations and pointing out possible statistical problems such as multicollinearity. Finally, it presents regression results of the two empirical models presented in the previous chapter. Moreover, this chapter provides analysis of the empirical results.

6.1 Leasing intensity among airlines

In order to capture the general trend in leasing among airlines throughout the sample period, Figure 10a displays the average lease propensity measured among sample firms over time using the two proxies for lease intensity. As expected, both lease proxies capture the trend very similarly. The trend lines suggest that airlines are less lease intensive now compared to mid-90s. Despite the fact that the absolute total value of lease contracts has increased, the relatively amount is declining steadily implying that lease propensity has declined. This might be due to more strict regulation regarding the off-balance sheet leasing. Or it might be that lease portfolios of airlines have matured and thus future minimum payments are declining implying that airlines have cut down their investments in new airplanes. The results might also imply that airlines have managed to improve their finances and therefore their relative proportion of operating leases getting smaller. Finally, balance sheet items such as property, plant and equipment in Lease (1) and depreciation cost in Lease (2) have increased quicker than off-balance sheet leases as the below figures are measured in relation to them

Airlines have increased their total assets significantly and thus the proportion of unrecognized assets has declined considerably. There might be present some "survivorship bias" in the figures as obviously the more financially constrained airlines have checked out from the competitive market since airlines have faced diminishing profits and increasing costs throughout the 21st century[5]. To tackle this challenge, a sensitivity analysis is carried out in figure 10b displaying the similar ratios among firms that remained in the data throughout the sample period. There were a total of 76 airlines in the sample data, from which only five held the same name on all sample years including American Airlines, Alaska Air, Delta Airlines,

[5] IATA Economic Performance of the Airline Industry 2016 - end year report

Southwest and Skywest. The trend remains similar to figure 10a, but the fluctuations in values are somewhat smaller and the trend lines remain more stable.

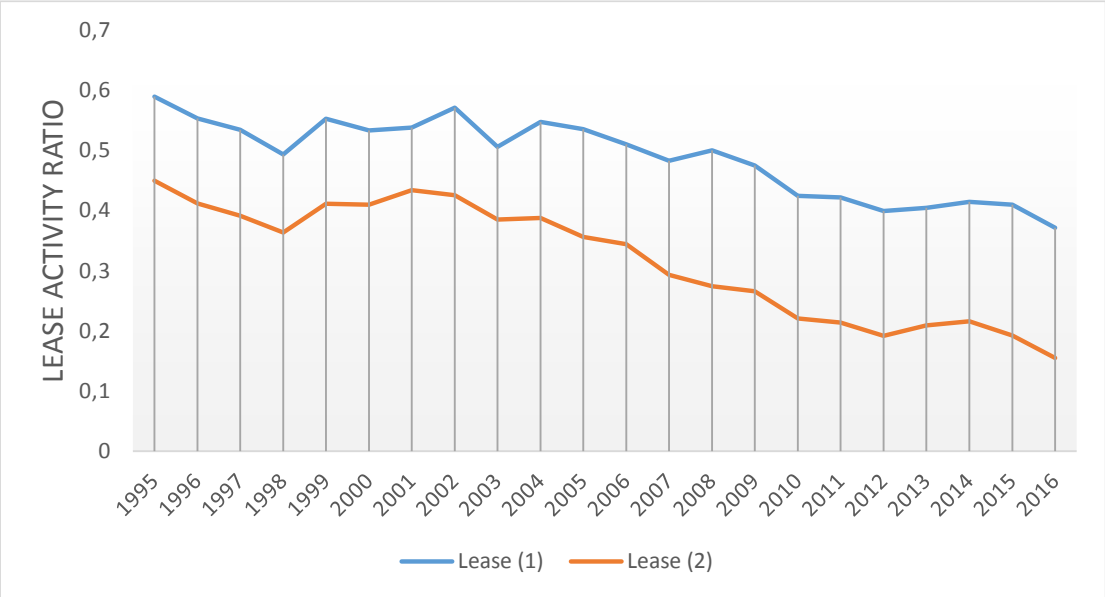

Figure 10a. *Average proportion of off-balance sheet leases*

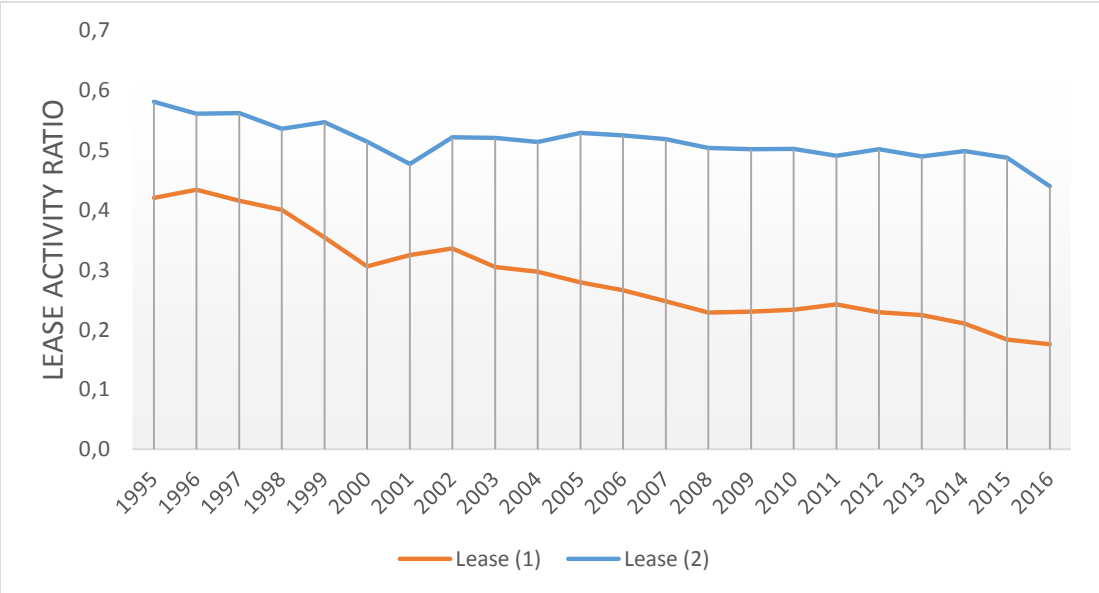

Figure 10b. *Average proportion of off-balance sheet leases among selected airlines*

Moreover, Figure 11 below illustrates the proportion of off-balance sheet leased assets from total assets. Despite peaking upwards around 2000 after the 9/11 terrorist attack when airlines took a huge financial hit, the overall trend is declining. Still, the trend would be somewhat similar using airlines that existed throughout the sample period like in figure 10b. Similarly, to earlier figure, stricter regulation might explain some of the declining trend.

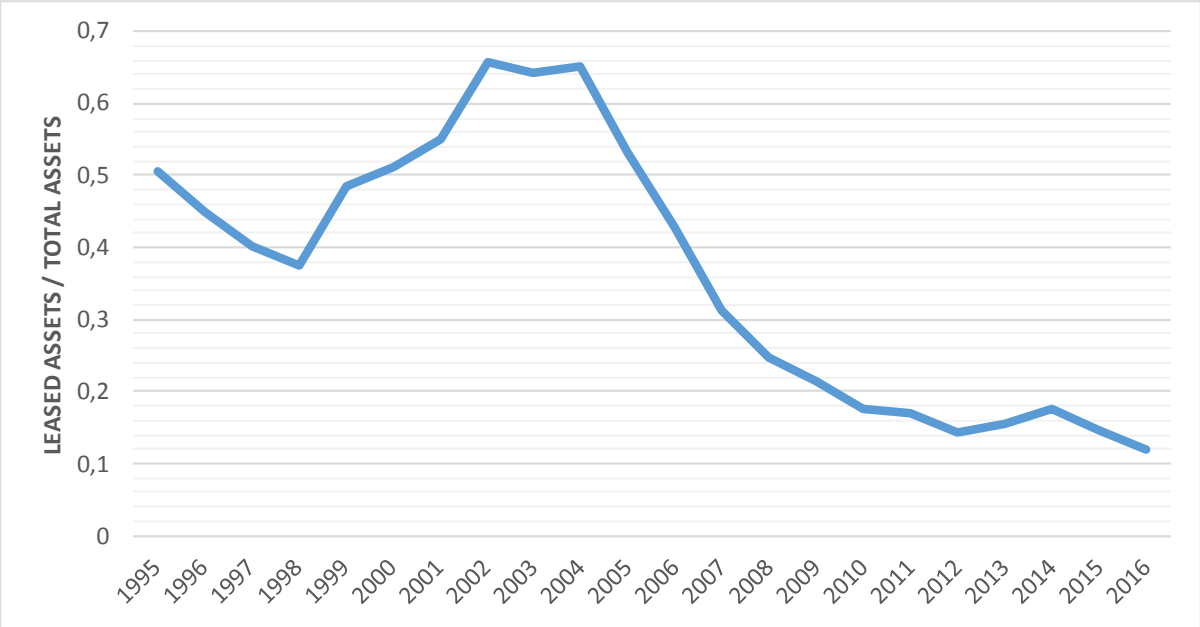

Figure 11. *Proportion of off-balance sheet assets of total assets (Off-balance sheet assets/Total assets)*

6.2 Descriptive statistics

Table 7 displays descriptive statistics for all variables in the study. It presents mean, standard deviation, median, mode, minimum and maximum for each variable. The size variable is natural logarithm of firm's sales instead of the ranking used in the model since the ranking itself is not very intuitive. The dependent variables, Lease (1) and Lease (2), have similar standard deviations despite their different mean absolute values. The sample contains some observations with zero leases thus the minimum value of lease propensity is 0.00. On the other hand, there are firms that lease almost all their assets with maximum values of 0.99 (Lease 1) and 0.97 (Lease 2).

Table 7. *Descriptive statistics for all variables. N=744 (Except Adjusted PIN, in which N=107)*

Variable	Mean	Std. Deviation	Median	Minimum	Maximum
Lease (1)	0.314	0.242	0.260	0.000	0.974
Lease (2)	0.488	0.235	0.498	0.000	0.985
Size	7.532	1.959	7.450	0.998	10.827
Adjusted PIN	0.126	0.050	0.111	0.998	10.827
Historical Profitability	-0.237	9.664	0.451	-240.982	32.171
MTB	1.677	6.051	1.240	78.989	60.720
Loss	0.282	0.450	0.000	0.000	1.000
Nodiv	0.663	0.473	1.000	0.000	1.000

Interestingly, the mean historical profitability in the sample is -0.24 implying poor profitability in the air transportation industry. The average market-to-book ratio (MTB) of SP&500 in 21st century is 2.74 [6]. The mean in the sample is 1.68, which is well below the average. Even though industries are not directly comparable to each other, it seems that airlines are priced with modest multipliers. Both historical profitability and market-to-book have high standard deviations implying that there are some extreme values in the sample. In line with these findings, also the Nodiv variable has quite high mean of 0.66 implying that majority of firms in the sample do not pay dividends.

6.3 Correlations

Table 8 presents the correlations between variables. Naturally lease proxies are very highly correlated with value of 0.835 as expected since they cover the same variable using different parameters. The significant negative correlation of -0.43 between historical profitability and market-to-book ratio is noteworthy. Thus, historically profitable companies do not have relatively high MTB ratios. Then again, high growth firms with high market-to-book ratio might not necessarily be yet very profitable. When they enter the profitability stage, often the growth rate stabilizes into a lower level and thus the MTB decreases. Otherwise, the independent variables have relatively low correlations to each other, which decreases the unwanted statistical phenomenon of multicollinearity, in which independent variables have high correlations with each other causing skewed results.

[6] Data available: http://www.multpl.com/s-p-500-price-to-book

Table 8. *Spearman and Pearson correlations.*

	Spearman's Rho						
Pearson correlations	*Correlations*	*Lease (1)*	*Lease (2)*	*Rank (Sales)*	*Nodiv*	*MTB*	*Loss*	*Historical profitability*
	Lease (1)	**1.000**	0.854	0.012	0.156	-0.024	0.129	0.014
	Lease (2)	0.835	**1.000**	-0.050	0.152	0.010	0.0103	0.025
	ln(Sales) Rank	0.103	-0.079	**1.000**	0.170	-0.029	0.030	-0.167
	Nodiv	0.184	0.157	0.170	**1.000**	-0.096	0.167	-0.197
	MTB	-0.060	-0.017	-0.037	0.002	**1.000**	-0.332	-0.324
	Loss	0.102	0.096	0.030	0.167	-0.033	**1.000**	-0.009
	Historical profitability	-0.003	-0.020	-0.039	-0.059	-0.426	-0.078	**1.000**

6.4 Empirical results

This section provides the regression results for both models including potential implications.

Table 9. *Regression results for Model (1). N = 744*

Model (1)		**Lease (1)**		**Lease (2)**	
Variables	***Predicted sign***	***Coefficient***	***t-stat***	***Coefficient***	***t-stat***
Lease (Intercept)	**+ / -**	0.223	11.022 ***	0.470	23.894 ***
Firm size	**-**	0.000	1.982 **	0.000	-3.081 ***
Historical profitability	**-**	0.000	-0.271	-0.001	-0.536
MTB	**-**	-0.002	-1.538	-0.001	-0.720
Loss	**+**	0.038	1.959 *	0.036	1.931 *
Nodiv	**+**	0.082	4.412 ***	0.081	4.489 ***
R^2		0.218		0.205	

*** Significant at P-value 0,01 ** Significant at P-value 0,05 * Significant at P-value 0,10

Table 9 reports regression results from the Model (1). As explained prior, in Model (1) the information asymmetry is measured using *firm size*. The model is then run using both lease variables. The results for using Lease (1) and Lease (2) are reported on their respective columns. Results suggest that information asymmetry proxy, *firm size*, does not explain lease propensity to large extent. Regressing Lease (1), it gets a positive coefficient, which is unexpected despite the value is very close to zero (o.ooo1). When using Lease (2), the method by Jennings & Marques (2013), the coefficient of *firm size* is negative as expected and statistically significant but again close to zero (-0.0001). Control variable *historical*

profitability has expected negative yet close to zero (-0.0002 and -0.001) coefficients which both are statistically insignificant. The second control variable, market-to-book (*MTB*), gets the predicted negative coefficient -0.002 using Lease (1) and -0.001 in the case of Lease (2) yet they are both statistically insignificant. Nevertheless, the assumption that historically profitable firms and high growth firms are not as relatively active users of operating leases has some support. The first dummy variable *Loss* gets expected positive and statistically significant coefficients using both lease proxies. This implies that firms reporting loss are more actively involved in off-balance sheet finance. The second dummy variable *Nodiv* has the anticipated and statistically significant positive coefficients 0.082 and 0.081. Hence, paying zero dividend seems to increase lease propensity as expected.

Regression results for Model (2)

Table 10. *Regression results for Model (2). N=108*

Model (2)		**Lease (1)**		**Lease (2)**	
Variables	***Predicted sign***	***Coefficient***	***t-stat***	***Coefficient***	***t-stat***
Lease (Intercept)	+ / -	0.389	7.058 ***	0.588	10.987 ***
adjPIN	+	-0.571	-1.435	-0.805	-2.084 **
Historical profitability	-	0.001	0.300	0.003	0.613
MTB	-	-0.002	-0.798	-0.000	-0.160
Loss	+	0.001	0.016	0.041	0.959
Nodiv	+	0.081	1.967 *	0.016	0.395
R^2		0.244		0.233	

*** Significant at P-value 0,01 ** Significant at P-value 0,05 * Significant at P-value 0,10

Table 10 reports regression results for Model (2), in which information asymmetry is covered using adjusted PINs. The regression is conducted using a subsample from the initial sample. Thus, the sample is lot smaller (108 observations) compared to Model (1) and the results are not as reliable in statistical sense. Surprisingly, adjusted PIN has strongly negative coefficients using both lease proxies. I anticipated it moving in tandem with lease propensity while the results signal the opposite. Using Lease (2) as a proxy for lease propensity, the coefficient is statistically significant. These finding do not support the hypothesis that off-balance sheet operating leases increase in information asymmetry. In this sample, yet small one, firms with high probability of informed trade implying high amount of information asymmetries seem to have lower lease propensity. In addition to the suboptimal sample size, the question remains whether probability of informed trade is representative proxy for information asymmetry. Moreover, the regression output of Model (2) implies both control

variables *historical profitability* and *MTB* have insignificant coefficients. Historical profitability has unanticipated negative coefficient. Market-to-book ratio has negative coefficient, which is in line with the forecasted sign and support the idea that firm with high MTB values lease less. Finally, dummies *Loss* and *Nodiv* has positive coefficients aligned with the expectations. Coefficients for loss variable are both insignificant in Model (2) whereas the coefficient for nodiv is significant in Lease (1) regression. Despite lacking significance these results support the expectation that loss reporting and non-dividend paying firms are more active users of operating leases similarly to Model (1).

When looking at the empirical evidence, it is safe to say that results do not generally support the hypothesis that the information asymmetry would explain the tendency to use off-balance sheet operating leases. The Model (1) results were neutral not really supporting nor rejecting the hypothesis while Model (2) actually supported the opposite scenario. Both models have some explanatory power measured with their r square values. It would have been interesting to test models in different industries and larger samples and maybe varying the lease components by adjusting discount ratios, lease lives and other assumptions built in the model.

The findings from the general trends in air transportation industry were somewhat surprising. Generally, the lease intensity seems to have decreased over the sample period reaching from year 1995 to year 2016. This might be partially explained due to the construction of variables. For example, the measurement off-balance sheet asset requires assumptions on discount rate and leased asset life.

7 CONCLUSIONS

Prior accounting research widely approves the problematic nature of accounting treatment for operating leasing as it causes significant off-balance sheet assets and liabilities. Off-balance sheet financing provided by operating leasing has material effects on financial statements. Under current standard, financial statements might lack transparency and comparability. The accounting treatment of operating leases has sparked an active and lengthy discussion in academia as well as among practitioners.

Firms make lease-or-buy decisions by carefully studying the economic and non-economic factors related to the decision. Strong tendency among firms to use lease financing and especially short-term operating lease contracts is traditionally explained by convenience, flexibility and economic benefits. Still, based on academic research and common business practices, it seems that the possibility for off-balance sheet financing strongly incentivizes managers to rely on operating leasing over other possibilities. Leasing standards are facing major reform as the new IFRS 16 standard will be implemented in 2019. It will have notable effect on the financial statements of IFRS-reporting firms and thus should be carefully studied to make preparations.

The purpose of this study is to shed light on determinants of lease propensity, and examine whether information asymmetry is associated with it. Information asymmetry is studied in many contexts, but the interconnectedness with leasing is not inspected in prior academic research. This study examined the association between information asymmetry and tendency to use off-balance sheet financing in form of operating leasing using two regression models. The empirical evidence does not support the hypothesis of a significant relationship between information asymmetry and leasing. The received results also points out that the off-balance sheet lease intensity has declined in air transportation industry the sample period of from 1995 to 2016.

LIMITATIONS AND SUGGESTIONS FOR FURTHER RESEARCH

As all researches, this study contains few limitations. Firstly, to measure asymmetric information, a proxy variable is used. It might not capture information asymmetry optimally. Depending on the proxy used, the result might be different. In addition, there are few subjective choices while estimating the capitalized amount of leases. The variations in discount rate, average life of leases and expiration date influence the result. Finally, the sample evidence is from a single industry, thus the results cannot be extrapolated to all industries. As this study

focuses solely on air transportation industry, it might have some built in characteristics which are not present in other industries.

Future research should focus on how the new IFRS 16 Leasing impact firms' financing behavior and needs. Post-implementation effects should be analyzed. Moreover, it would be interesting to study whether the new standard mitigates information asymmetries, as it makes financial statements more transparent.

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